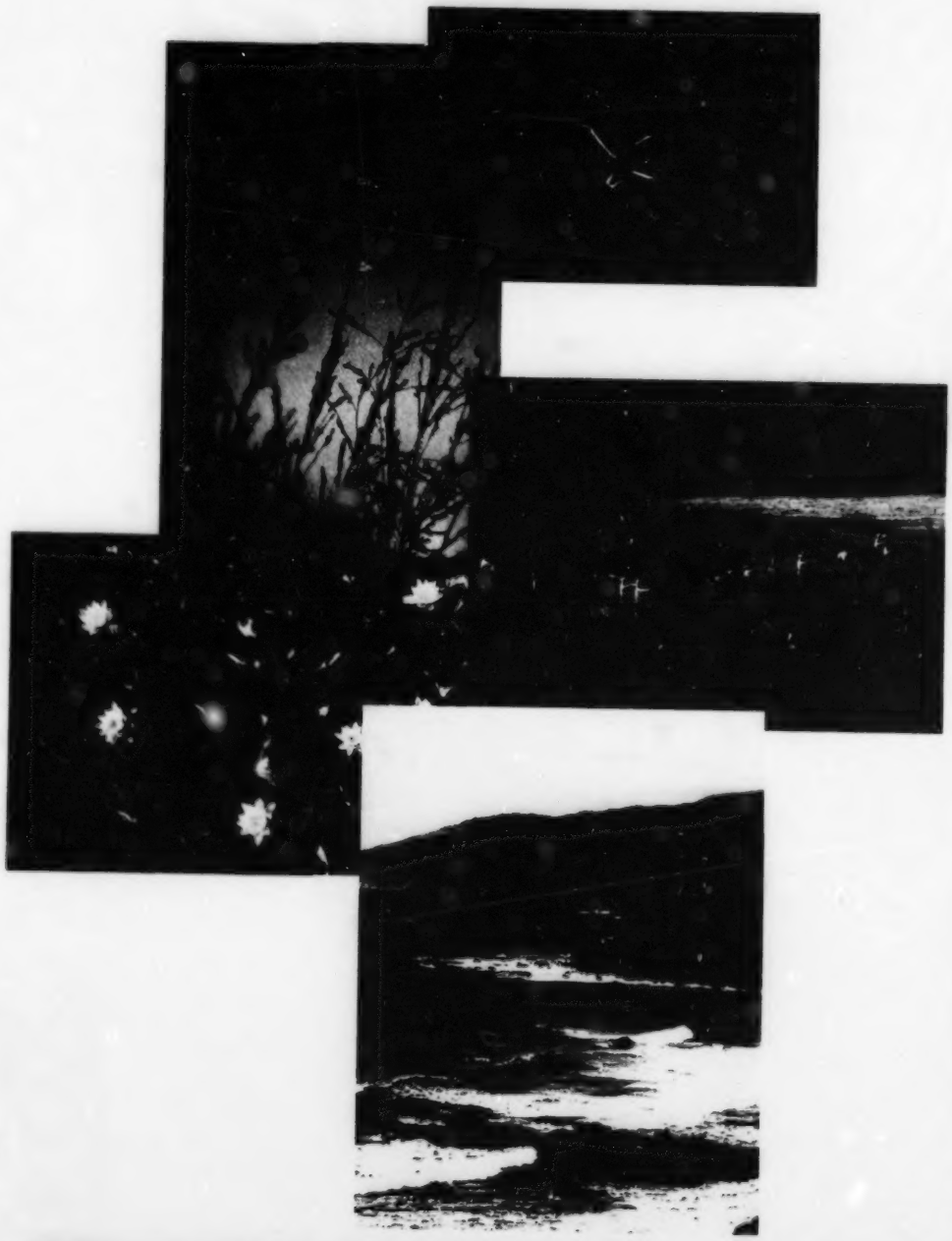
A Strategy to Prevent Coastal Habitat Loss and Degradation in the Georgia Basin



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The British Columbia Nearshore Habitat Loss Work Group

June, 2001

prepared for the Puget Sound/Georgia Basin International Task Force

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A STRATEGY TO PREVENT COASTAL HABITAT LOSS AND DEGRADATION IN THE GEORGIA BASIN

The British Columbia
Nearshore Habitat Loss
Work Group

June, 2001

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MEMBER AGENCIES AND ORGANIZATIONS OF WORK GROUP

(For a list of Work Group participants see Appendix A)

DFO	Fisheries and Oceans Canada http://www.dfo-mpo.gc.ca/index.htm
DUC	Ducks Unlimited Canada http://www.ducks.ca/home.html
EC	Environment Canada - Canadian Wildlife Service http://www.cws-scf.ec.gc.ca/
LUCO	BC Land Use Coordination Office http://www.luco.gov.bc.ca/
MAFF	BC Ministry of Agriculture, Food and Fisheries – BC Fisheries http://www.gov.bc.ca/fish/
MELP	BC Ministry of Environment, Lands and Parks – Wildlife & Habitat Branches http://www.gov.bc.ca/elp/
MMA	BC Ministry of Municipal Affairs http://www.gov.bc.ca/marh/
WCEL	West Coast Environmental Law http://www.wcel.org.

OTHER ACRONYMS USED IN REPORT

CDC	Conservation Data Centre (of MELP)
GBEI	Georgia Basin Ecosystem Initiative
NABCI	North American Bird Conservation Initiative
PECP/PCJV	Pacific Estuary Conservation Program/Pacific Coast Joint Venture
PMHL	Pacific Marine Heritage Legacy
SEI	Sensitive Ecosystem Inventory
STC	Stewardship Technical Committee
SHIM	Sensitive Habitat Inventory and Mapping
WHSRN	Western Hemisphere Shorebird Reserve Network

EXECUTIVE SUMMARY:

Purpose:

The Strategy is intended to address the recommendations regarding loss of estuarine wetlands and other nearshore habitats made by the Marine Science Panel under the BC/Washington Environmental Cooperation Council, and specifically:

- to provide information on the status of coastal habitat protection in the Georgia Basin;
- to identify specific commitments to action that will help address gaps or weaknesses in the current management regime; and
- to make additional recommendations for improving coastal habitat protection.

Vision:

A Georgia Basin with naturally diverse and healthy coastal habitats, as well as interconnected marine, riverine, and terrestrial habitats, to support biologically diverse and self-sustaining fish and wildlife populations, both for their inherent values and their overall contribution to quality of life in the Basin.

Goal:

Prevent further loss and degradation of coastal habitats and, where practicable, restore degraded coastal habitats in the Georgia Basin.

Principles:

Ecosystem-based, adaptive management

Priority protection for existing habitats and strategic guidance for enhancement and restoration

Partnerships, local participation, and stewardship

Precautionary Principle

Key Strategies:

1) identify all important and sensitive coastal habitats;

2) secure high priority habitats

3) improve management of coastal habitats, including restoration of degraded habitats; and

4) improve stewardship of coastal habitats.

Under each strategy, the Work Group member agencies and organizations established objectives, identified specific commitments to action, and agreed on some additional recommendations. These are briefly summarized following.

Strategy 1: Identifying important and sensitive coastal habitats:

Objectives:

- improve, harmonize, and increase the overall accessibility of information resources on coastal habitats and species;
- better define and identify sensitive, vulnerable, and other priority coastal habitats; and
- continue to identify key indicators and monitor changes in coastal habitats and species over time to determine problems and trends.

Commitments to Action involving:

- development of techniques for inventory, mapping, modelling, and analysis;
- application of inventory standards and analysis;
- centralized information retrieval and data sharing;
- identification of rare and endangered species and plant communities;
- identification and mapping of critical and sensitive habitats and ecosystems; and
- development and application of indicators and coastal habitat monitoring approaches.

Recommendations related to:

- additional support for collection of data on coastal and marine plant and animal species, sensitive ecosystems, and landscape processes that support integrated planning;
- more consistent data collection and monitoring protocols for volunteers and stewardship groups;
- improved intertidal mapping;
- process for assessing estuary and other wetland functions and values;
- identification of monitoring needs for coastal habitats in more remote areas; and
- improved tools and techniques for assessing cumulative impacts.

Strategy 2: Securing Priority Coastal Habitats

Objectives:

- continue to acquire key private lands, designate federal or BC Crown protected areas or conservation areas, or otherwise secure important coastal habitats; and
- seek international recognition of priority coastal habitats.

Commitments to Action involving:

- purchase/acquisition of key coastal habitat areas;
- pursuit of conservation covenants and landowner partnerships;
- designation of important federal and BC Crown coastal areas as marine protected areas, parks, or conservation areas such as National Wildlife Areas, Migratory Bird Sanctuaries, or Wildlife Management Areas;
- partnerships and overall coordination of efforts related to land; and
- international recognition of internationally significant habitats through use of the Western Hemisphere Shorebird Reserve Network, Important Bird Areas, sensitive ecosystem designation, Ramsar designation and other tools.

Recommendations related to:

- establishing or improving partnerships and land securement agreements involving all levels of government, First Nations, non-government organizations, land users, other stakeholders, and the general public;

- improving overall coordination of agencies and organizations involved in securing coastal habitats; and
- considering establishment of a "Shoreline Reserve" within which development would be controlled and managed to protect coastal habitat values.

Strategy 3: Improving Management of Coastal Habitats

Objectives:

- Improve coastal habitat planning and integration of coastal habitat values in regional, sub-regional, and local planning processes;
- Develop guidelines and best management practices for coastal habitats;
- Establish partnerships and implementation agreements with key user groups to improve use of guidelines and best management practices;
- Improve and make better use of government regulatory and policy mechanisms for protecting coastal habitats; and
- Identify priorities for coastal habitat restoration and enhancement, undertake specific projects, and evaluate results.

Commitments to Action involving:

- more integrated regional and sub-regional coastal zone planning, and integration of coastal habitat values in other planning processes. There is a focus on protection of coastal and marine biodiversity, marine sensitive areas and other critical habitats, water quality, and fish protection;
- development of guidebooks, best management practices, pilot projects, other tools, and associated outreach to assist planners, developers, resource users, conservation groups, land owners, and others with environmentally sound planning and use of coastal habitats;
- establishment of implementation agreements addressing support and delivery of best management practices and other measures to improve management of coastal habitats;
- improved federal, provincial, and municipal legislation or by-laws for the protection of coastal habitats and enforcement of existing legislation;
- development of provincial and federal policies and strategies for the management of coastal marine areas; and
- identification and launching of priority restoration and enhancement projects.

Recommendations related to:

- reviewing integrated planning processes undertaken for coastal areas to determine most effective approaches;
- considering development of an integrated coastal zone management framework using the Fraser River Estuary Management Program (FREMP) as a possible model;
- enhancing local government capacity to more effectively exercise its land use planning and management roles including protecting sensitive coastal habitats through use of Official Community Plans, protective bylaws, and Regional Growth Strategies;
- considering adoption of "no net loss" policy and legislation to protect coastal estuaries and other wetlands;
- ensuring any new policies addressing development of coastal areas include best management practices for conservation of native species and ecosystems;

- improving coordination of permitting, licensing, and enforcement procedures and direct additional resources to monitoring and ensuring compliance; and
- considering development of provincial natural resource damage assessment procedures.

Strategy 4: Improving Awareness and Stewardship of Coastal Habitats:

Objectives:

- consolidate stewardship information on coastal habitats to improve accessibility and assist in the identification of gaps;
- support cooperative development of targeted coastal stewardship initiatives and information materials; and
- continue to improve general public awareness, understanding, and action to protect coastal habitats.

Commitments to Action involving:

- continued support for, or involvement in, a variety of existing stewardship programs;
- support for the consolidation and coordination role of the Stewardship Technical Committee and the Stewardship Centre website; and
- evaluation of existing stewardship information and development of new materials and strategies for increasing public awareness and involvement in coastal habitat stewardship and decision making.

Recommendations related to:

- reviewing relevant documentation and resources from other jurisdictions and making them available at the Stewardship Centre website;
- seeking additional support for programs that foster partnerships with farmers and other land users that can lead to improved protection of coastal habitats while encouraging economically sustainable practices;
- evaluating coastal stewardship initiatives and informational materials wherever possible to determine effects on attitude, behaviour, and land use activities over time; and
- developing a communications strategy targetted at increasing awareness of the links between coastal habitat conservation and the broad range of personal benefits they provide to people.

Implementation:

Existing partnership ventures and integrated planning initiatives are identified as key implementation mechanisms for many of the strategies identified in the report. These include, for example, the BC Resources Inventory Committee, the Pacific Estuary Conservation Program/Pacific Coast Joint Venture, the Georgia Basin Ecosystem Initiative, the Stewardship Technical Committee, various government/non-government stewardship partnerships, and many others.

1.0 INTRODUCTION AND BACKGROUND TO STRATEGY

Coastal habitats - those habitats making up the shoreline strip of shallow water and the lands immediately adjacent to it - are among the most diverse and productive ecosystems in the world and perform vital ecological processes. These coastal habitats can include areas of shallow marine water, rocky shoreline, estuaries, marshes, sand- and mudflats, eelgrass beds, kelp beds, and intertidal algae.

In the Georgia Basin, coastal habitats support populations of fish, birds, and other wildlife that are often nationally or internationally significant. Millions of resident and migratory shorebirds, waterfowl, and other birds make use of critical migration and wintering habitat in the Georgia Basin as part of the Pacific Flyway. The area also supports a high percentage of vulnerable, threatened, and endangered wildlife and plant species, as well as highly-valued fish and shellfish.

Coastal areas also tend to be centres of human population settlement and resource development. The Georgia Basin is no exception. Urban expansion, dyking, and other resource-based activities have contributed to extremely high losses of estuarine and other wetland habitats in this region beginning in the 1900's, and high population growth rates continue to threaten remaining coastal habitats.

As more coastal communities seek to expand and diversify their economies, partly as a result of downturns in traditional resource-based activities, there are even more pressing needs to ensure that new growth and development is more environmentally sustainable and directed to less sensitive areas. If there is to be a healthy, productive, and biologically diverse Georgia Basin environment for generations to come, it is essential to prevent the further loss and degradation of coastal habitats. This means protecting remaining coastal habitats as well as the interconnected marine, riverine, and terrestrial ecosystem processes that sustain them.

1.1 Puget Sound-Georgia Basin International Task Force

The Premier of British Columbia and the Governor of Washington signed an Environmental Cooperation Agreement in 1992 committing the province and state to work together on transboundary environmental problems. The BC/Washington Environmental Cooperation Council was formed and water quality was soon identified as a high-priority issue requiring immediate, joint attention. Several task forces, including the Puget Sound-Georgia Basin International Task Force, were established to coordinate cross-border efforts related to the shared waters of the Georgia Basin and Puget Sound.

The Environmental Cooperation Council convened a Marine Science Panel in 1994 which identified the following priority issues for the Puget Sound-Georgia Basin waters:

1. Minimizing estuarine wetland habitat losses;
2. Establishing marine protected areas;
3. Protecting marine animals and plants;
4. Minimizing large freshwater diversions;
5. Minimizing introduction of exotic species;
6. Controlling toxic wastes; and
7. Preventing large oil spills.

Loss of estuarine wetlands and other nearshore habitat was identified as the most important threat to the health of these shared marine waters, in part because such losses were considered to cause significant and often irreversible harm. Separate Washington and BC work groups were set up to address loss of nearshore habitats.

This strategy was prepared by the BC Nearshore Habitat Loss Work Group (for a list of Work Group members, see Appendix A). The actions and recommendations it contains are intended to support and complement the recommendations of the Washington Work Group as outlined in their 1998 document entitled "Nearshore Habitat Loss in Puget Sound: Recommendations for Improved Management". The member agencies and organizations of the BC Work Group remain committed to working cooperatively with Washington to address matters of mutual interest and concern, including: research; habitat classification and inventory; habitat restoration; and sharing of educational and planning tools and resources.

This strategy should also be considered in conjunction with the recommendations and activities of other work groups under the Puget Sound-Georgia Basin Task Force, particularly those of the Exotic Species Work Group and the Protect Marine Life Work Group, that address other issues posing threats to coastal habitats (e.g. introduced species in intertidal areas, control of ballast water discharge, etc.)

1.2 Purpose

This strategy is intended to address the recommendations regarding loss of estuarine wetlands and other nearshore habitats that were made by the Marine Science Panel under the BC/Washington Environmental Cooperation Council, and specifically:

- to provide information on the status of coastal habitat protection in the Georgia Basin
- to identify specific commitments to action by Work Group member agencies and organizations that help to address gaps or weaknesses in the current management regime
- to make additional recommendations for improving coastal habitat protection and management in the Georgia Basin and in British Columbia as a whole.

1.3 Coastal Habitat Defined

For the purpose of this strategy, the general area of interest is the "coastal zone"[1] which encompasses the subtidal (nearshore) area below zero chart datum (zero tide) to the 20 metre iso-bath depth, the intertidal (foreshore), and the supratidal (backshore) to the limit of marine influence (see Figure 1). The limit of marine influence varies in different locations and was not strictly defined for the purposes of the study.

1.4 Georgia Basin Coastal Habitats

Between the shores of British Columbia and Washington are shared waters that include the Strait of Georgia and Puget Sound (Figure 2). The Georgia Basin contains the Canadian portion of those shared waters, plus portions of the adjoining slopes of Vancouver Island and the mainland coast of British Columbia. The Georgia Basin is approximately 260 km long and 20 km wide and is located at the southernmost reach of British Columbia's 29,500 km of coastline.

Figure 1 The Coastal Zone

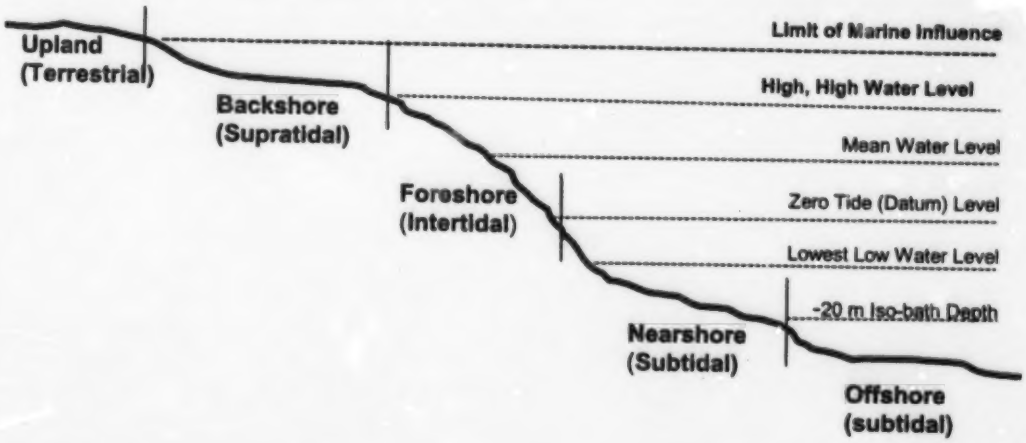
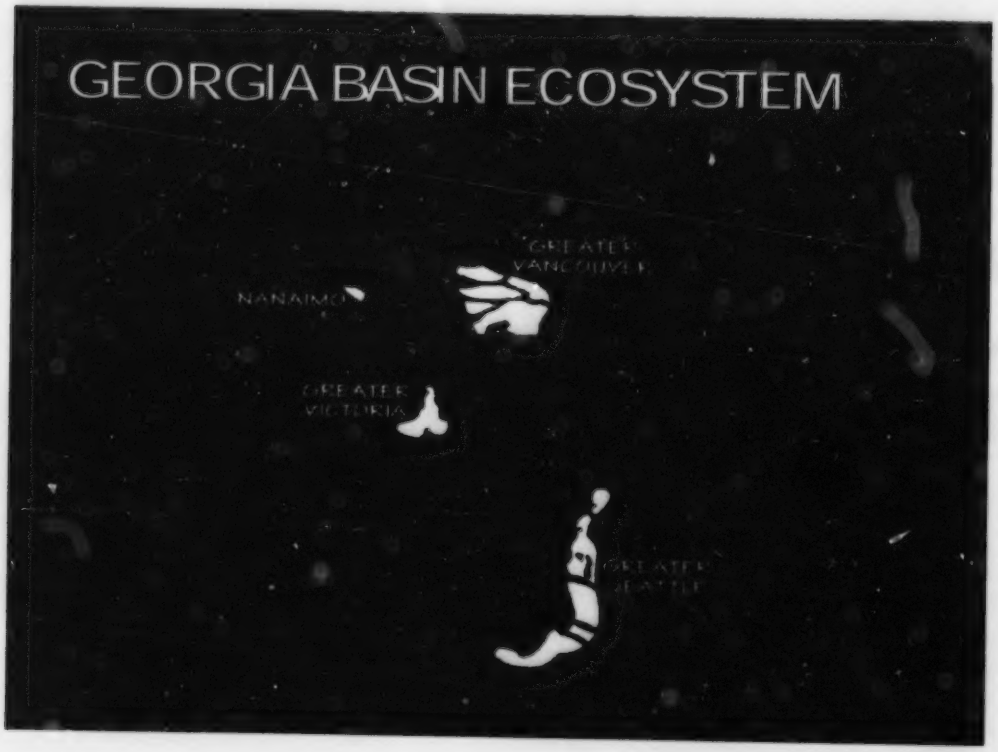


Figure 2: Puget Sound- Georgia Basin Ecosystem



The Georgia Basin is estuarine; it is enriched by freshwater, nutrients, and sediments from more than 400 rivers and streams that flow from Vancouver Island, other smaller islands, and the Coast and Cascade Mountains. These rivers and streams form sub-estuary habitats where they meet with marine waters. Throughout the basin, intertidal and subtidal habitats commonly contain eelgrass beds, intertidal algae, kelp beds, and estuarine marshes.

Rich estuarine and wetland habitats make up approximately 6% of overall shoreline length and 23% of shoreline area in the Strait of Georgia.[2] These habitats are critical to an enormous diversity of marine invertebrates, birds, marine mammals, and terrestrial species during all or portions of their life cycles.

Anadromous fish in the Georgia Basin include all Pacific salmon species, eulachon, and several sea-run trout species. The Fraser River alone produces more salmon than any other river system in the world and 50% of the British Columbia salmon production. Herring, other marine fish, and species such as seals and sea lions, also depend on coastal habitats for key life cycle stages. Subtidal areas are frequently preferred feeding sites of the vulnerable gray whale and harbour porpoise, as well as diving ducks. Highly valued shellfish beds and a number of non-vascular plants are also unique to such habitats.

Georgia Basin coastal areas are part of the critical stopover and wintering areas for almost all the bird species recorded in BC that move within or through the Pacific Flyway. More raptorial birds, shorebirds, waterfowl and other water birds winter here than anywhere else in Canada, and the international significance of the area is widely recognized.

Of the 355 red-listed[3], and 432 blue-listed [4] species of vertebrate animals and vascular plants[5] recorded province-wide by the BC Conservation Data Centre (CDC), 119 (or 34%) of the red-listed and 112 (or 26%) of the blue-listed species occur within the Georgia Basin. Of these, some 29 red-listed and 37 blue-listed species are known to occur specifically within coastal habitats. Several of these are considered globally vulnerable or imperiled.

1.5 Threats to Georgia Basin Coastal Habitats

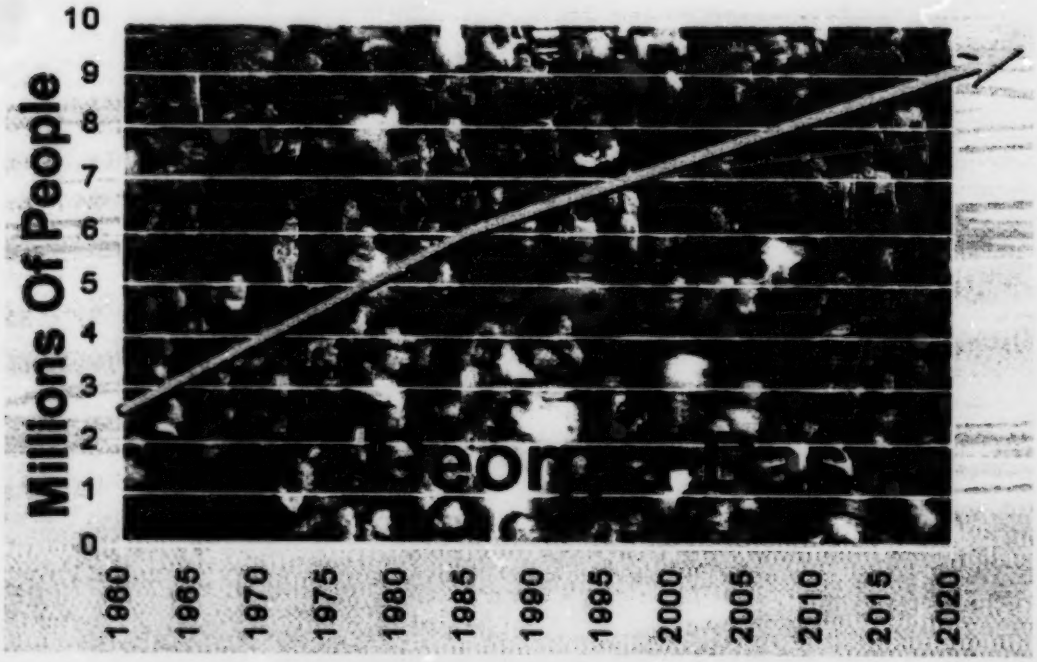
Less than 4% of the coastal wetlands and estuaries in the Georgia Basin are currently protected under federal and provincial legislation. Approximately 23% of the nearshore has already been urbanized and less than 4% of the upland portions of the Strait of Georgia are still in their natural state. Young forest (<140 years old) comprises 65% of the area immediately upland of the intertidal zone.[6]

Impacts on coastal habitats have increased as the human population of British Columbia has grown. More than 3 million of the 4 million people currently in British Columbia live along the coast and over 2.7 million (68%) live in the Georgia Basin. The population of the Georgia Basin has grown by 125% over the past 25 years. By 2021, it is projected to increase by a further 37%, with growth continuing to centre primarily around the coastal cities of Vancouver, Victoria, and the rapidly growing communities along the east coast of Vancouver Island (see Figure 3).

Dyking, primarily for farming, altered much of the estuarine habitat and other wetlands in the Georgia Basin beginning in the early 1900's. Since then, urban development and expansion, forestry, and other resource activities within or adjacent to coastal habitats have contributed to further degradation of these areas. The cumulative effects of urban growth have been substantial. About 30% of the natural areas developed in the Lower Mainland between 1967

and 1982 were originally wetlands (Pilon and Kerr, 1984). In the Fraser Lowland and parts of Vancouver Island, it is estimated that 50% to 70% of the original wetland habitat has disappeared and most other major river estuaries and coastal streams in the Georgia Basin have been similarly reduced or

Figure 3: Georgia Basin Population Growth (source: Georgia Basin Ecosystem Initiative)



altered. In some areas, such as the Fraser River waterfront of Vancouver, coastal habitat losses are near 100 percent.

Water quality in these coastal habitats has been negatively impacted by such changes as shifts in water flow regimes (e.g. dams, diversions, accelerated runoff from urban areas), pollution (e.g. pesticides, excess nutrients, sewage, waste, oil and other chemicals), increased sedimentation from forestry and other activities, and dredging. A summary of some of the major causes and effects of coastal habitat loss in the Georgia Basin is provided in Appendix B.

Coastal habitat loss and alteration have contributed to the elimination of some wildlife and fish species from all, or portions, of the Georgia Basin. There have been significant reductions in the numbers of many others (e.g. all species of Pacific salmon and other anadromous fish, eulachon, Marbled Murrulet, Great Blue Heron, Brant, and Peregrine Falcon). Some plant species have also been lost from waterfront areas as a result of urban development. In areas of the Victoria waterfront, for example, a number of rare plant species once recorded there no longer occur, including the Western pearlwort, beach sand-spurry, Macoun's meadowfoam and Howell's montia.[7] Human-induced changes have also allowed both exotic and native species to invade or expand their ranges with negative or unknown impacts on resident native species

(e.g. Purple Loosestrife, Atlantic Salmon, Scotch Broom, Japanese Oyster Drill, Green Crab, and Opossum).

2.0 Focus and Limitations of Strategy

Human activities that have the most direct and evident impacts on coastal habitats in the Georgia Basin are the main focus of this strategy. There is an emphasis on impacts originating within or immediately adjacent to those coastal habitats, although it is recognized that the inter-connectivity of ecological systems means that activities affecting coastal habitats may sometimes be located a considerable distance away. The strategy does not address weather events, geological processes, or large-scale, natural changes that may be accelerated by human act vities, such as global warming. These types of changes, however, should be monitored and accounted for, wherever possible, in overall land and resource use strategies.

The strategy summarizes significant ongoing and planned actions of the Work Group member agencies and organizations as well as their shared priorities for preventing further coastal habitat loss and degradation. It reflects the input and affiliations of the Work Group members and is not an exhaustive review of the activities and initiatives affecting coastal habitats in the Georgia Basin. Because of the vital roles played by other federal and provincial agencies, local governments, First Nations, non-governmental organizations, and the general public in bringing about improved protection of coastal habitats, partnership approaches are supported and encouraged wherever possible.

3.0 Vision, Goal, and Principles

The vision:

> A Georgia Basin with naturally diverse and healthy coastal habitats, as well as interconnected marine, riverine, and terrestrial habitats, to support biologically diverse and self-sustaining fish and wildlife populations, for both their inherent values and their overall contribution to quality of life in the Basin.

The goal:

> Prevent further loss and degradation of coastal habitats and, where practicable, restore degraded coastal habitats in the Georgia Basin

The following principles guide the specific strategies required to address this goal and move toward achieving the overall vision:

Ecosystem-based, adaptive management
Integrated planning that is based on ecological boundaries and adaptive management, which includes monitoring and feedback, should be used wherever possible.

Protection of existing habitats with strategic guidance for enhancement and restoration
Initiatives that help protect existing high quality coastal habitats and/or provide strategic guidance for restoration and enhancement should be encouraged.

Partnerships, local participation, and stewardship

Partnerships and collaboration among all levels of government, First Nations, non-governmental organizations, other stakeholders, and the general public should be supported as key mechanisms for protecting coastal habitats.

Precautionary Principle

Because of the complexity of ecological systems, where there are threats of serious or irreversible damage to coastal habitats, scientific uncertainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation, and precautionary actions should be encouraged.

4.0 Strategies to Prevent Coastal Habitat Loss in the Georgia Basin

Using existing expertise, technology, and resources more effectively and adaptively is fundamental to improving coastal habitat protection and management. Continued pressures on important and vulnerable habitats and growing public support for habitat protection have increased both the opportunities and the necessity for partnership ventures and joint stewardship projects. These partnerships may involve various levels of government, First Nations, non-governmental organizations, private landowners, land users, and the general public. Such broad participation can be crucial to coastal habitat protection and management efforts.

Existing partnership ventures and integrated planning initiatives are key implementation mechanisms for many of the strategies identified in this report. For example, the Pacific Estuary Conservation Program (PECP)[8];/Pacific Coast Joint Venture (PCJV)[9] and other initiatives now being integrated under the North American Bird Conservation Initiative (NABCI)[10]; as well as the Georgia Basin Ecosystem Initiative (GBEI)[11], the Pacific Marine Heritage Legacy (PMHL)[12], the joint federal/provincial Marine Protected Areas Strategy (MPAs)[13], and the Stewardship Technical Committee (STC)[14], figure prominently in the commitments to action and general recommendations outlined in the following sections.

A variety of other partnership ventures and multi-agency planning efforts also continue to be instrumental in improving cooperative planning and management of specific coastal areas, including such initiatives as the Fraser River Estuary Management Program (FREMP), the Fraser Basin Council (FBC), the Burrard Inlet Environmental Action Plan (BIEAP), the Squamish Estuary Management Plan (SEMP), and the Baynes Sound Roundtable. Information on some of these and other initiatives can be found in the list of websites in Appendix C or the table in Appendix D.

For the purposes of this report, strategies to prevent coastal habitat loss and degradation in the Georgia Basin were grouped into four general categories reflecting the needs to:

1) identify all important and sensitive coastal habitats;
2) secure high priority habitats (e.g. the most vulnerable/threatened of the important and sensitive habitats identified);
3) improve management of coastal habitats, including restoration of degraded habitats; and
4) improve stewardship of coastal habitats.

Under each category, there is a brief summary of the current status, and then a number of strategic objectives and associated actions are identified to help address gaps or weaknesses in the current management regime. These actions reflect specific commitments on the part of the Work Group member agencies and organizations, either alone or through participation in existing partnership initiatives. Recommendations are also made to address some of the remaining gaps. May of these would require the involvement of other levels of government, including First Nations, non-governmental organizations, and the general public.

4.1 Identifying Important and Sensitive Coastal Habitats

Ready access to accurate and up-to-date information is essential to guide habitat securement, management, and stewardship efforts. This information is obtained from inventories of coastal habitats, ecological evaluations (monitoring, modelling, impact analyses, etc.), and other research and information gathering efforts.

Various coastal habitat inventory, assessment, and monitoring initiatives are underway for BC. The BC Land Use Coordination Office (LUCO) has undertaken a coast-wide biophysical inventory that has resulted in a range of inventory information, from coarse video-imaging to detailed site evaluation, for over 25,000 kilometres (or 85%) of BC's coast. This inventory system is the basis for provincial physical and biological shorezone mapping and has been adopted as a Resource Inventory Committee (RIC)[15] Standard for BC (See Table 1). The method has also been adopted and used for inventory of shorelines in Washington State. LUCO has also developed a coastal atlas for the Southern Strait of Georgia that identifies biophysical resources and human uses as well as shoreline sensitivity and countermeasures for oil spill cleanups.

Table 1 Standards for Coastal Zone Habitat Inventory and Mapping[16]

Resource Inventory Committee (RIC) Standards

- BC Physical Shore-zone Mapping Standard
- BC Biological Shore-zone Mapping Standard
- BC Estuary Mapping Manual
- BC Marine Ecological Classification
- Assessing Shellfish Culture Capability in Coastal BC: Sampling Design Considerations for Extensive Data Acquisition Surveys

Resource Inventory Committee (RIC) Reports

- Standard methods for sampling resources and habitats in coastal subtidal regions of BC: Part 1: Review of mapping with preliminary recommendations
- Standard methods for sampling resources and habitats in coastal subtidal regions of BC: Part 2: Review of sampling with preliminary recommendations
- Coastal resource information inventory
- Review of aerial video survey techniques and recommendations of survey standards
- Oil Spill Atlases for the Southern Strait of Georgia and West Coast of Vancouver Island.

The BC Conservation Data Centre (CDC)[17], within the BC Ministry of Environment, Lands and Parks (MELP), maintains records of the occurrence and ecological status of vertebrates, invertebrates, vascular plants, and plant associations in BC. This information is used for Sensitive Ecosystem Inventory (SEI)[18], Sensitive Habitat Inventory and Mapping (SHIM), and

other initiatives for identifying and assessing habitats. CDC Information on marine species is currently limited, however, particularly for invertebrates (e.g. crustaceans, shellfish) and marine plants (e.g. sea weeds). To date, there have been few systematic surveys of BC's coastal/marine flora and fauna.

British Columbia has made considerable progress in developing comprehensive and standardized systems to inventory the coastal zone and to rank rare, sensitive, and/or vulnerable species and habitats. The key challenges are to address remaining information gaps and to integrate the information into meaningful coastal habitat management practices.

The *Georgia Basin Ecosystem Conservation Partnership*[19] under the *Georgia Basin Ecosystem Initiative* is one of the initiatives helping to address such gaps. The partnership is currently compiling and consolidating information from the CDC and other member agencies and organizations on important habitats within the Georgia Basin, including coastal areas. This information will facilitate comparisons between habitat sites and assist in setting priorities for conservation and management.

4.1.1. Objectives for Identifying Important and Sensitive Coastal Habitats:

- Improve, harmonize, and increase the overall accessibility of information on coastal habitats and species for use in planning and decisionmaking
- Better define and identify sensitive, vulnerable, and other priority coastal habitats.
- Continue to identify key indicators and monitor changes in coastal habitats and species over time to determine problems and trends.

4.1.2 Commitments to Action and Recommendations for Identifying Important and Sensitive Coastal Habitats:

To improve, harmonize, and increase the overall accessibility of information on coastal habitats and species:

action: Continue to undertake coastal biophysical and human-use inventories, mapping, analysis, and modelling, while maintaining a data repository for the Province of BC's related coastal and marine databases (Contact Agency: LUCO).

action: Continue to liaise with the State of Washington to develop a seamless, GIS-based coastal inventory mapping system (Contact Agency: LUCO).

action: Continue to evaluate new coastal inventory and planning technologies and facilitate the development of provincial coastal inventory standards under the Resource Inventory Committee (RIC) (Contact Agencies: LUCO, MELP).

action: Complete the mapping of sensitive ecosystems of the Sunshine Coast and adjacent islands as part of the Sensitive Ecosystem Inventory (SEI) initiative (Contact Agencies: EC, MELP).

action: Develop an internet-based coastal and land-use inventory retrieval system for dissemination of provincial inventory information within government and to the public (Contact Agency: LUCO).

action: Continue to promote the use of the DFO/BC Fisheries Project Registry[20], a web-based list of completed and current fish and fish habitat projects (Contact Agencies: DFO, MAFF, MELP)

recommendation: Further standardize information collection and analysis for coastal habitats through the Resources Inventory Committee (RIC) or other inter-agency committees.

recommendation: Increase support to those agencies involved in conducting inventories of coastal information that advances integrated planning, conservation, and management. This should include maintenance of CDC occurrence and status records for all coastal and marine plant and animal species and sensitive ecosystems.

recommendation: Undertake additional intertidal mapping initiatives in selected areas to further develop methods, standards, and database tools.

recommendation: Increase support to other ongoing and new initiatives that will help to integrate coastal habitat information into land- and water-use planning and decisionmaking.

To better define and identify sensitive, vulnerable, and other priority coastal habitats:

action: Continue to define and model Marine Sensitive Zones (MSZs) and Critical Habitats within the Coastal Zone (Contact Agency: LUCO).

action: Continue to develop and refine the provincial marine ecosystem classification system so as to determine special coastal features and to evaluate marine representativeness for the purposes of Marine Protected Area development and coastal management in general (Contact Agency: LUCO).

action: Continue to systematically collect and disseminate information on status, location, and level of protection for rare and endangered species and plant communities in BC, including coastal habitats. (Contact Agency: MELP-CDC).

action: Consolidate existing information on habitats, land status, threats, and future options for key estuaries along the coast of BC to assist in ranking estuaries for protection and management (Contact Agencies: DUC, EC, MELP).

recommendation: Develop or adopt an evaluation process for use in assessing estuary and wetland functions and values and determining their significance, giving full consideration to the work of Washington State and other relevant jurisdictions.

recommendation: Examine initiatives such as the Burrard Inlet Environmental Action Plan and the Victoria and Esquimalt Harbours Ecological Inventory and Rating project as possible models for detailed inventory and rating of ecological features and values in sensitive intertidal, backshore, and subtidal areas subject to high levels of impact.

To identify key indicators and monitor changes in coastal habitats and species over time to determine problems and trends:

action: Continue to undertake monitoring activities to assess population trends of shorebirds and other coastal bird populations to determine changes over time (Contact Agency: EC).

action: Continue to undertake monitoring activities to prevent the establishment of invasive species within Georgia Basin coastal habitats (e.g. Spartina in estuaries). (Contact Agency: EC).

action: Continue to participate in the identification and development of indicators relevant to coastal habitats through the GBEI and the Transboundary Georgia Basin–Puget Sound Environmental Indicators Working Group (Contact Agencies: EC, MELP, DFO).

action: Continue to work towards identification of key biophysical indicators for use in monitoring marine ecosystem health in the Georgia Basin, building upon recent efforts summarized in "Indicators of Marine Ecosystem Health for the Georgia Basin, British Columbia", and the follow-up report entitled, "Ratings for DFO's Potential Indicators for Marine Ecosystem Health" (Contact Agencies: DFO, LUCO)

action: Continue to undertake coastal trend analysis and information assessment for the Georgia Basin to demonstrate ecological changes based on existing data (e.g. shellfish closures, changes to shorelines, species loss/decline, etc. (Contact Agency: LUCO).

action: Continue to develop tools and procedures to monitor long-term habitat changes along the Pacific Coast. This will include coordinating overall metadata collection and consolidation with EC and other partners, as well as developing satellite/land use layers, and more detailed site specific habitat layers, for habitat monitoring of land use changes (Contact Agency: DUC)

action: Establish current baseline values and monitoring procedures for BC coastal waterfowl populations and coordinate with BC partners and US counterparts to conduct regular standardized monitoring (Contact Agency: DUC).

action: Continue to support ongoing monitoring initiatives of local governments and community groups, wherever possible, by providing standard methodologies (e.g. RIC), training programs, and other technical assistance, equipment, or advice (Contact Agencies: DFO, LUCO, MELP, EC, MAFF).

recommendation: Assess the role of voluntary programs within existing provincial and federal inventory and monitoring programs and develop monitoring protocols that include standardized data collection techniques, training programs, and assessments.

recommendation: Consider adding one or more new indicators to MELP's "Environmental Trends in BC" reporting so as to better reflect the health of coastal habitats.

recommendation: Develop or adopt and implement improved tools and techniques for assessing the cumulative effects of human activities on coastal habitats.

4.2 Securing Priority Coastal Habitats

Efforts to acquire, protect or otherwise secure coastal habitats may be undertaken through various means including:

- private land conservation efforts;
- donations ("ecogifts");
- acquisition by individual non-governmental organizations or by government/non-government partnership ventures, such as the Nature Conservancy of Canada, The Nature Trust of British Columbia, the Islands Trust Fund, the Habitat Conservation Trust Fund, the Pacific Estuary Conservation Program, the Georgia Basin Ecosystem Conservation Partnership, and the Pacific Marine Heritage Legacy.
- protected area or conservation area designations by federal, provincial, or local governments, including First Nations (e.g. Terrestrial and Marine Parks, Ecological Reserves, National Wildlife Areas, provincial Wildlife Management Areas, Wildlife Habitat Areas, etc.)

A number of ongoing initiatives remain vital to the long-term protection of coastal habitats in the Georgia Basin. For example, the PECP/PCJV partners have been acquiring or otherwise securing key coastal wetlands and associated upland habitats in BC since the 1980's.[21] The Habitat Conservation Trust Fund, the Georgia Basin Ecosystem Partnership, the Vancouver Island Wetland Management Program (VIWMP) and other individual conservation organizations and conservation partnerships also continue to be instrumental in securing coastal habitats.

Federal and provincial Crown land may be protected in parks, ecological reserves, or other designations that significantly restrict land or water use activities. There are over 100 BC Parks and Ecological Reserves in BC that have marine and/or coastal components. The Federal - Provincial Marine Protected Areas Strategy aims to coordinate all existing federal and provincial marine protected areas programs under a single umbrella to achieve a national system of marine protected areas on the Pacific coast by 2010. This initiative should afford new opportunities to protect coastal habitats using the provincial and federal Parks Acts, *Ecological Reserves Act*, *Oceans Act* and the proposed federal *Marine Conservation Areas Act*.

Other legislative measures that offer differing degrees of control over land use include: federal National Wildlife Areas and Migratory Bird Sanctuaries; provincial Wildlife Management Areas, Forest Practices Code measures, *Land Act* reserves; and conservation covenants that protect lands through legal agreements between a private landowner and a land conservation organization or public body.[22]

There are additional designations that do not offer specific legal protection but can provide national or international recognition of important habitat values. Such recognition can help to increase public awareness and lever additional resources and management attention (e.g. Ramsar designation for wetlands of international importance, Western Hemisphere Shorebird Reserve Network (WHSRN) sites, Important Bird Areas (IBAs), Sensitive Ecosystem designation, etc.)

4.2.1 Objectives for Securing Priority Coastal Habitats:

- Continue to acquire key private lands, designate federal, provincial, or local protected areas or conservation areas, or otherwise secure important coastal habitats.
- Seek international recognition of priority coastal habitats.

4.2.2 Commitments to Action and Recommendations for Securing Priority Coastal Habitats:

To continue to acquire, designate, or otherwise secure important coastal habitats:

action: Through the PECP/PCJV and other partnership ventures, work towards securing additional hectares of critical estuary habitat in the Georgia Basin, including direct acquisition of some key holdings (Contact Agencies: DUC, EC, MELP, DFO).

action: Through the PECP/PCJV and other partnership ventures, continue to pursue conservation covenants and partnerships with landowners for important habitat areas (Contact Agencies: DUC, EC, MELP, DFO)

action: Continue to evaluate the Gabriola Passage pilot MPA within the Georgia Basin, and work with Parks Canada to study the feasibility of establishing a National Marine Conservation Area in the southern Gulf Islands (Contact Agencies: EC, DFO, EC, LUCO, MELP).

action: Pursue designation of Wildlife Management Areas (WMAs) under the *Wildlife Act* for critical coastal habitats on Crown land. This includes a proposed WMA at Roberts Bank, a new WMA proposal for Brunswick Point in the Lower Mainland, and a proposed extension to the Parksville-Qualicum WMA on Vancouver Island (Contact Agency: MELP).

action: Through the PECP/PCJV, develop a coordinated strategy to assist in prioritizing and expediting establishment of provincial Wildlife Management Areas, National Wildlife Areas, or other relevant designations (Contact Agencies: DUC, EC, MELP).

action: Working with the Islands Trust Fund, continue to identify and secure key coastal habitats in the Gulf Islands through covenants, acquisition, or other means (Contact Agency: WCEL).

action: Through the PECP/PCJV and other partnerships, continue to seek opportunities to assist or support authorized conservation organizations in negotiating conservation covenants with land owners to protect coastal habitats (Contact Agencies: DUC, EC, MELP, WCEL).

action: Continue to work with partners to encourage qualified private and corporate landowners to make donations of ecologically sensitive land, or interests in land, as "ecological gifts" under the federal *Income Tax Act* [23] (Contact Agency: EC).

action: Through the PECP/PCJV and Georgia Basin Ecosystem Conservation Partnership, continue to work together with other government and non-governmental organizations to identify and prioritize partnership opportunities for acquiring, protecting, or otherwise securing coastal habitats (Contact Agencies: DUC, EC, MELP).

recommendation: Improve overall coordination of information, resources, and efforts of agencies and organizations involved in acquiring, protecting, and securing coastal habitats through initiatives like the North American Bird Conservation Initiative (NABCI).

recommendation: Where sensitive coastal habitats have been identified, consider establishment of a "Shoreline Reserve", similar to the Agricultural Land Reserve (ALR)[24], within which development would be controlled and managed to protect coastal habitat values. A Shoreline Reserve Commission or Management Board could monitor and oversee activities within the reserve area and facilitate public input to decisions.

recommendation: Pursue additional partnership arrangements and land securement agreements between all levels of government, First Nations, non-governmental organizations, and the public.

To seek international recognition for important coastal habitats:

action: Pursue a Hemisphere Reserve designation for the Fraser Estuary under the Western Hemispheric Shorebird Reserve Network (WHSRN). The proposal will encompass existing Wildlife Management Areas (WMAs) at Boundary Bay, Sturgeon Bank, and the South Arm Marshes, as well as a proposed WMA at Roberts Bank (Contact Agencies: EC, MELP)

action: Seek Ramsar designations for internationally significant wetlands, WHSRN designations for critical shorebird areas, and IBAs, as appropriate, to help increase public awareness of internationally significant coastal habitats in the Georgia Basin (Contact Agencies: EC, MELP).

4.3 Improving Management of Coastal Habitats

In 1998, the Province of British Columbia released its Coastal Zone Position Paper, which presents the Province's longer-term vision, interests, and objectives for management of the coastal zone and its resources. This paper is the basis for the Province of British Columbia's discussions with the Government of Canada to develop a National Oceans Strategy and provides some context for actions identified in this strategy.

To better understand the wide array of legislation, policies, and initiatives at the federal, provincial, and local levels currently affecting management of coastal habitat, the BC Nearshore Habitat Work Group funded a background study, "Preserving British Columbia's Coast: A Regulatory Review" (Nowlan, 1999).[25] The report was prepared by West Coast Environmental Law and some of its key information and recommendations for legislative, regulatory, and policy improvements are referenced in this strategy. A more recent "Canada-British Columbia Fish Habitat Management Agreement", signed in July, 2000 by federal and provincial fisheries agencies, aims to conserve and protect fish and to increase certainty, consistency, and efficiency in efforts to protect fish habitat.

The Guide to Stewardship Bylaws, the Greenways Guide, and a conservation manual prepared for Sensitive Ecosystems Inventory[26] are good references for the range of planning actions that local governments may take to improve protection of coastal areas (refer also to Section 4.4 of this document for information on stewardship initiatives). One of the strongest forms of planning

protection for local governments is to designate a sensitive coastal area as a "development permit area", in which no development can take place until a permit has been issued. These designations may specify that an area must remain free from all development or can ensure that development follows established guidelines.

4.3.1 Objectives for Improving Management of Coastal Habitats:

- Improve coastal habitat planning and integration of coastal habitat values in regional, sub-regional, and local planning processes.
- Develop guidelines and best management practices for coastal habitats
- Establish partnerships and implementation agreements with key user groups to improve use of guidelines and best management practices.
- Improve and make better use of government regulatory and policy mechanisms for protecting coastal habitats.
- Identify priorities for coastal habitat restoration and enhancement, undertake specific projects, and evaluate results.

4.3.2 Commitments to Action and Recommendations for Improving Management of Coastal Habitats:

To improve coastal habitat planning and integration of coastal habitat values in other planning processes:

action: Continue to coordinate inter-agency, regional and sub-regional coastal zone planning with specific focus on protection of coastal and marine biodiversity, marine sensitive areas, and critical habitats (Contact Agency: LUCO).

action: Work through the Stewardship Technical Committee, in partnership with stewardship groups, local governments, other agencies, and intended user groups, to produce a coastal shorelines stewardship guide that will assist planners, developers, and others working with shoreline areas to do environmentally sound planning (Contact Agencies: MMA, DFO, EC, MELP).

action: Continue to develop and distribute reports and conduct public education on land use planning issues to help guide coastal habitat protection, including a completed series on private land protection, a "Guide to Forest Land Use Planning", and the upcoming "Smart Growth Guide to Municipal Law" (Contact Agency: WCEL).

action: Undertake coordinated outreach to local governments in support of the development of Official Community Plans and Regional Growth Strategies for high priority habitat areas, beginning with the Comox Valley on Vancouver Island and the Delta area in the Lower Mainland (Contact Agencies: EC, MELP, LUCO).

action: Continue working to prevent further degradation of water quality in coastal habitats through support for Pollution Prevention Plans, Liquid Waste Management Plans, and reduction of point and non-point source pollution under the NPS Action Plan including:

completion of pilot projects in the Georgia Basin; development of Best Management Practices; and outreach to local governments (Contact Agency: MELP).

action: Work with partners to develop coastal habitat conservation strategies for key estuary areas, including strategies for the Fraser and Courtenay/Comox estuaries (Contact Agencies: DUC, CWS, MELP).

action: Refine the PCJV habitat model and gather data for use in predicting the mix of habitats that best support important waterfowl and other bird species in coastal habitats (Contact Agencies: DUC, EC).

action: Work with the wildlife ecology program at Simon Fraser University and other partners in developing a Pacific and Yukon regional shorebird conservation plan. Associated initiatives may include research and monitoring, habitat protection, management, and stewardship initiatives to improve protection of shorebirds and their habitats in areas such as the Fraser River Delta.[27] (Contact Agencies: EC, DUC, MELP).

recommendation: Enhance local government capacity to more effectively exercise its land use planning and management roles under the *Local Government Act* by providing additional technical direction and planning grants. Greater protection of sensitive coastal habitats should be encouraged through use of Development Permit Area designations in Official Community Plans (OCPs), establishment of greenways, or passing of stewardship or other protective bylaws.

recommendation: Encourage Regional Districts to develop regional growth strategies (RGS) that limit urban growth to environmentally sustainable levels. Sensitive coastal foreshore areas should be designated in an RGS to remain free from development.

recommendation: Review integrated planning initiatives undertaken for coastal areas to determine effective tools, models and/or gaps to consider in future applications.[28]

recommendation: Actively consider establishing an integrated coastal zone management framework that would consolidate relevant existing federal, provincial, and local government policies and procedures and help address remaining gaps. It should address processes for more coordinated planning, decision making, permitting/licensing, and enforcement in the coastal zone, using FREMP as a possible model.

To develop guidelines and best management practices for coastal habitats:

action: Working with the Regional District of Comox-Strathcona and other relevant partners, develop a manual of guidelines and best management practices for habitat protection in the coastal area (Contact Agencies: LUCO, MELP, DFO).

action: Continue to undertake applied research on estuarine and foreshore fish habitat in the Pacific Region to formulate general principles that will aid managers in developing estuary and foreshore plans that protect and maintain the productive capacity of fish habitat (Contact Agency: DFO).

action: As part of the development of a coastal shorelines stewardship guide through the Stewardship Technical Committee, provide general recommendations on preferred designs

and mitigation measures for structures in the coastal environment (Contact Agencies: MMA, DFO, MELP, EC).

action: Produce factsheets on small marine projects that will provide outlines of the impacts of four common projects (docks, boat launches, erosion control, and marine outfalls) on the coastal environment, along with mitigation measures, preferred designs, and the information requirements for review and approval by DFO (Contact Agency: DFO).

To establish partnerships and implementation agreements that will improve use of guidelines and best management practices:

action: Continue to pursue tripartite Memoranda of Understanding (MOU) with local governments. Support implementation of those MOUs, wherever possible, through the provision of technical support for delivery of Best Management Practices and through the provision of input to by-laws, development permits, and other local government processes (Contact Agencies: MELP, EC, DFO).

action: In partnership with the forest industry, produce best management practices for log handling facilities that provide guidance on techniques and procedures to minimize the impact of log handling facilities on coastal environments (Contact Agency: DFO).

action: Through the GBEI, support development of an Agricultural Riparian Best Management Practices pilot project with the Agriculture Council and the BC Ministry of Agriculture, Food and Fisheries to improve riparian protection on agricultural lands (Contact Agencies: MELP, EC, and DFO).

action: Continue to work through the 10 Point Committee on Agriculture and Environment and through other initiatives to help resolve wildlife-related concerns of farmers while also attempting to minimize the impacts of certain agricultural activities on coastal habitats and species (Contact Agencies: MELP, EC, DUC).

To improve and make better use of government regulatory and policy mechanisms for protecting coastal habitats:

action: Continue to pursue federal legislation for the protection of species at risk in Canada (Bill C-33 is currently before the House of Commons) as part of a larger federal strategy for the protection of species at risk that includes the National Accord for the Protection of Species at Risk and the Habitat Stewardship Program (Contact Agency: EC).

action: Continue to work towards improving provincial and federal laws for species at risk by working with the BC Endangered Species Coalition, writing law reform briefs, doing public education, and testifying to Parliamentary Committees on the new federal *Species at Risk Act* (Contact Agency: WCEL).

action: Work with appropriate partners to promote better government legislation and policies to help protect marine water quality and waterfowl habitats by undertaking reviews of current tools, making recommendations for change, and identifying appropriate avenues for involvement (Contact Agency: DUC).

action: Continue to work toward more effective implementation of the provincial *Fish Protection Act* (FPA) provisions including: streamside protection policy directives, sensitive stream designations, a recovery plan template, and new policies and procedures to improve consideration of fish and fish habitat in water allocation and licensing decisions (Contact Agency: MELP).

action: Continue to seek implementation of specific provisions under the *Forest Practices Code of British Columbia Act* and other regulations to help protect coastal habitats, including application of the Riparian Management Area Guidebook and use of Marine Sensitive Zones as defined in the Operational Planning Regulation and Timber Harvesting Practices Regulation (Contact Agencies: MELP, BC Fisheries).

action: Work with BC Assets and Land Corporation (BCAL) and other partners to implement the provisions of the provincial Salmon Aquaculture Policy Framework and ensure that coastal impacts are avoided through such measures as escape prevention protocols, performance-based regulation of waste discharges, improved salmon farm siting, improved fish health, and alternative salmon farming pilot projects. This will include a community and First Nation consultation for the re-siting of problematic salmon farms (Contact Agencies: BC Fisheries, MELP, DFO).

action: Continue to assist non-governmental organizations in their efforts to establish more Marine Protected Areas in BC under the federal-provincial Marine Protected Areas Strategy (Contact Agency: WCEL).

action: Work with BCAL to implement the provincial shellfish aquaculture development initiative and ensure that suitable sites are found for shellfish aquaculture facilities. This will include community and First Nations consultations to determine suitable sites for new facilities (Contact Agency: BC Fisheries).

recommendation: Ensure that any new policies and strategies addressing foreshore development include best management practices for the conservation of native species.

recommendation: Consider development of a provincial "no net loss" policy and corresponding legislation to protect coastal estuaries and other wetlands which would be reflected in land and water use decisions under the *Land Act, Local Government Act, Environmental Assessment Act, Water Act*, and other relevant legislation and policy.

recommendation: Improve coordination of permitting, licensing, and enforcement procedures in coastal areas, and enhance legal and administrative mechanisms for the enforceability and appeal of decisions.

recommendation: Direct additional resources to improving the capacity of government to monitor activities and enforce existing legislative/ regulatory mechanisms to better protect coastal habitats.

To identify restoration and enhancement priorities and undertake projects:

action: Continue to work with local governments and community stewardship groups on restoration and enhancement through programs such as the Urban Salmon Habitat Program, Fisheries Renewal BC, the Habitat Conservation and Stewardship Program,

Habitat Conservation Trust Fund, Forest Renewal BC (Resource Inventory and Watershed Restoration Programs), Habitat Restoration and Salmon Enhancement Program, and others (Contact Agencies, DFO, MELP, EC, BC Fisheries).

action: In partnership with Forest Renewal BC and MOF, continue to support development of strategic goals, performance measures, and an ecological framework for ranking terrestrial ecosystems most in need of restoration within BC. This will complement the existing Watershed Restoration Program under Forest Renewal BC (Contact Agency: MELP).

action: Through the PECP/PCJV, identify ways to influence the amount and quality of coastal habitats to best meet the species needs of the Pacific flyway. This will include analyses of existing data sets to test species distribution patterns against habitat and landscape characteristics, as well as investigation and monitoring of how specific habitat parameters and enhancement programs affect the capacity of an area to support species (Contact Agencies: DUC, EC, MELP).

action: Continue to work with relevant agencies and private landowners in exploring restoration options for intertidal and floodplain habitats including: identifying tools for measuring habitat quality, determining potential restoration sites and priorities, assembling relevant habitat information, advising other groups involved in restoration, and implementing specific physical works (Contact Agencies: DUC, DFO, MELP)

recommendation: Consider development of a provincial natural resource damage assessment process to assist in determining management priorities and as a basis for obtaining compensation in the event of habitat loss (e.g. large marine oil spill).

4.4 Improving Awareness and Stewardship of Coastal Habitats

Increased understanding can contribute to increased respect for the critical ecological roles of coastal habitats, the substantial social and economic benefits they provide, and their vital importance to fish and wildlife. The challenge for governments and other stewardship agencies is to find a way to make information accessible to all levels of society about the need for conservation of coastal habitats and about the tools available for achieving stewardship goals. Different documentation must be targeted to different user groups such as land use planners, decision-makers, developers, property owners, volunteer stewards, and the general public.

Federal and provincial government agencies and private organizations are currently coordinating the publication and distribution of stewardship documents under a "Stewardship Series" banner through a cooperative Stewardship Technical Committee[29]. A wide variety of stewardship documents have been produced in the form of guidelines, brochures, handbooks, and other reports that provide information about habitat values, applicable environmental laws, and actions that can be taken to help protect habitats. A majority of these documents focus on freshwater and terrestrial areas, though many also contain information relevant to coastal habitats. Of the guidelines and other stewardship documents currently listed by the Stewardship Centre, about 35 of the total 47 contain some information relevant to coastal habitats.

Initiatives that involve partnerships between community groups, local governments, and federal and provincial government agencies are often the most successful in encouraging participation

and improving the results of stewardship efforts. There are a number of programs underway that support stewardship of coastal habitats such as the Urban Salmon Habitat Program[30], Fisheries Renewal BC[31], the Habitat Conservation and Stewardship Program[32], the Habitat Conservation Trust Fund[33], Forest Renewal BC (Resource Inventory and Watershed Restoration Programs)[34], the Habitat Restoration and Salmon Enhancement Program[35], and the Greenfields program. Although challenges remain, the Stewardship Technical Committee, as well as the Stewardship Centre, the Fisheries Project Registry, and other centralized data sources, are beginning to improve overall coordination among various stewardship initiatives.

4.4.1 Objectives for Improving Awareness and Stewardship of Coastal Habitats:

- Consolidate stewardship information specific to coastal habitats to improve accessibility and assist in the identification of gaps.
- Support cooperative development of targeted coastal stewardship initiatives and information materials.
- Continue to improve general public awareness, understanding and action to protect coastal habitats

4.4.2 Commitments to Action and Recommendations for Improving Awareness and Stewardship of Coastal Habitats:

To consolidate existing stewardship information materials and identify gaps/needs:

action: Continue to actively support the Stewardship Technical Committee and collectively undertake ongoing development of the Stewardship Centre clearing house website, ensuring that existing and new documentation and resource materials relevant to coastal habitat protection are captured and made available (Contact Agencies: EC, MELP, DFO, MMA, BC Fisheries).

action: Through the Stewardship Technical Committee, continue to identify gaps in coastal habitat stewardship documentation and resource materials (Contact Agencies: EC, DFO, MELP).

recommendation: Undertake reviews of coastal habitat stewardship documents, resource materials, and model projects developed in other jurisdictions and consolidate with existing information for more ready access at the Stewardship Centre clearing house website.

recommendation: Increase awareness of ongoing and completed stewardship projects an improve the accessibility of data by encouraging use of the Fisheries Project Registry or similar lists that are publicly available

To support cooperative development of targeted information materials and stewardship initiatives:

action: Through the Stewardship Technical Committee, and in partnership with stewardship groups, municipalities, other agencies, and intended users, provide stewardship guidance to landowners along marine shorelines in BC through development of a coastal shorelines stewardship guide (Contact Agencies: MMA, DFO, EC, MELP).

action: Continue to support more ecologically sensitive urban growth through participation in the non-governmental organization Smart Growth BC (Contact Agency: WCEL).

action: Make available up-to-date information on best practices for conservation covenants through such documents as "Greening Your Title: Best Practices for Conservation Covenants in BC" (forthcoming) (Contact Agency: WCEL).

action: Make available up-to-date information on the tax implications for protecting coastal habitat and other private land through such documents as "Giving it Away: Tax Implications of Gifts to Protect Private Land" (Jan. 2000) (Contact Agency: WCEL).

action: Continue to foster better relationships with landowners and farmers, and to encourage land use practices that are compatible with conservation of coastal species, through support for development of initiatives such as the Westham Island landowner agricultural working group (Contact Agencies: DUC, EC).

action: Through the PECP/PCJV, cooperate with individual farmers to identify alternate agricultural crops that are beneficial to birds and wildlife and economically viable for farmers, and expand related extension and demonstration programs (Contact Agencies: DUC, EC).

action: Continue to undertake programs such as Greenfields and the Comox Valley Waterfowl Management Program, which are cost-sharing, voluntary farm stewardship projects aimed at conserving soil and providing habitat for over-wintering waterfowl through the planting of winter cover crops.

action: Continue to strengthen support for community-based stewardship actions through the Habitat Conservation and Stewardship Program (HCSP)[36] and provincial Urban Salmon Habitat Program (Contact Agency: DFO).

action: Continue to support community-based, volunteer "keeper" programs such as Streamkeepers, Wetlandkeepers, Shorekeepers (intertidal), and Reefkeepers (subtidal) that help to promote awareness and stewardship (Contact Agencies: DFO, EC, MELP).

action: Continue to participate in Wetlandkeepers, an awareness and stewardship program for individuals and communities interested in stewarding a wetland, and help draw attention to high priority coastal wetland habitats (Contact Agency: EC)

action: Continue to work with other government agencies and community groups, landowners, and other partners to undertake coastal stewardship initiatives similar to that underway for the Comox-Strathcona area of Vancouver Island (Contact Agencies: EC, MELP, DUC).

recommendation: Encourage or strengthen programs that help foster partnerships with farmers and other land users and that lead to improved protection of coastal habitats while encouraging economically sustainable agricultural practices.

To continue to improve general public awareness, understanding and action to protect coastal habitats:

action: Continue to develop an internet-based site specific to coastal management and protection (Contact Agency: LUCO).

action: Continue public legal education programs designed to improve environmental protection and increase public participation in environmental decision-making (Contact Agency: WCEL).

action: Continue to inform and educate the public regarding coastal land use and planning issues through publication of guides such as, "Preserving British Columbia's Coast: a Regulatory Review", "Protecting British Columbia's Wetlands: A Citizen's Guide", and the upcoming "Smart Growth Guide to Municipal Law" which contains a chapter on coastal land use decisions (Contact Agency: WCEL).

action: Continue to actively support and participate in maintaining "Coast Lines: A newsletter of the Coastal Zone Canada (BC) Association" (Contact Agency: EC).

action: Produce a discussion paper on the costs and benefits of protecting critical habitat compared to the other values of private land (Contact Agency: WCEL).

action: Continue to communicate through use of written materials, the web and other mediums to promote public awareness of, and support for, coastal and marine species and habitat values, protection policies, and partnerships (Contact Agencies: DUC, EC, MELP, WCEL, BC Fisheries).

recommendation: Develop a communications strategy aimed at increasing awareness of the links between coastal habitat conservation and the broader range of personal benefits people receive from protecting coastal habitats (e.g. role of wetlands in flood protection, contaminant filtering, groundwater re-charge, ecological productivity, educational, commercial, and recreational benefits, and overall contribution to quality of life.)

recommendation: Through use of studies, questionnaires, or other methods, evaluate coastal stewardship initiatives and informational materials to determine changes in attitude, behaviour, land use activities, and/or impacts over time.

ENDNOTES

1 As currently defined by the Land Use Coordination Office (LUCO) in BC for use in regional level planning (1:20,000 to 1:250,000 scales)

[2] Estimates provided by the BC Land Use Coordination Office

3 "Red-listed' species are defined by the BC Conservation Data Centre any indigenous species or subspecies (taxa) considered to be Extirpated, Endangered, or Threatened in British Columbia. Extirpated taxa no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed. Red-listed taxa include those that have been, or are being, evaluated for these designations.

4 Blue-listed" species are defined by the BC Conservation Data Centre as any indigenous species or subspecies (taxa) considered to be Vulnerable in British Columbia. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened.

5 BC Conservation Data Centre records do not cover most invertebrate animals and non-vascular plants.

[6] Estimates provided by the BC Land Use Coordination Office

[7] From information provided by the BC Conservation Data Centre

[8] The Pacific Estuary Conservation Program (PECP) is a partnership of government and non-governmental organizations that has been securing coastal wetlands in BC since the 1980's. Member agencies and organizations currently include, the federal Department of Fisheries and Oceans, Environment Canada, the BC Ministry of Environment, Lands and Parks, the Habitat Conservation Trust Fund, Ducks Unlimited Canada, and The Nature Trust of BC. The PECP is now acting as the securement arm of the Pacific Coast Joint Venture (PCJV). For more information see: http://www.ec.gc.ca/press/pecp_b_e.htm and http://ramsar.org/key_awards99_interview_pecp.htm

9 The PCJV was initiated in 1989, under the umbrella of the North American Waterfowl Management Plan (NAWMP), as an international partnership of Canadian and American government agencies and non-governmental bodies working to secure, restore, and enhance coastal wetlands from BC to northern California.

[10] The North American Bird Conservation Initiative (NABCI) has recently been created to foster greater coordination and cooperation among Canadian, American and Mexican bird initiatives. In Canada, four main conservation initiatives will be coordinated and integrated through NABCI—the NAWMP for ducks, geese and swans, the Partners in Flight (PIF) initiative for songbirds and other landbirds, the Canadian Shorebird Conservation Plan (CSCP) for sandpipers and plovers, and Wings Over Water (WOW) for seabirds, colonial waterbirds, and related species. This integration will enhance biologically-based and landscape-oriented approaches to conservation of bird populations.

[11] Information on the Georgia Basin Ecosystem Initiative can be found at: http://www.pyr.ec.gc.ca/GeorgiaBasin/gbi_eIndex.htm

[12] Information on the Pacific Marine Heritage Legacy is available at: http://www.harbour.com/parkscan/pmhl/english/english.htm

[13] Information on Marine Protected Areas can be found at: http://www.luco.gov.bc.ca/coastmrn.htm

[14] Members of the Stewardship Technical Committee currently include: BC Hydro, Environment Canada, Fisheries and Oceans Canada, Habitat Conservation Trust Fund, BC Ministry of Agriculture, Food and Fisheries, BC Ministry of Environment, Lands and Parks, BC Ministry of Municipal Affairs, BC Ministry of Transportation and Highways, and the Provincial Capital Commission. There are additional supporting organizations which are listed on the Stewardship Centre web site at: http://www.stewardshipcentre.org/code/main/cs_frset.htm

15 The multi-agency Resources Inventory Committee (RIC) is responsible for establishing standards for natural and cultural resources inventories, including collection, storage, analysis, interpretation and reporting of inventory data. RIC focus to date has been dominantly in the area of standards for field inventory. At the time of this update, September 1999, some 145 documents have been produced comprising the range of inventory standards and procedures, field guides; field forms and background documents. For a complete listing of standards visit http://www.for.gov.bc.ca/RIC/standards.htm

[16] Resource Inventory Standards (RIC) documents can be purchased from the Queen's Printer in Victoria, BC. Additional information is available at http://www.for.gov.bc.ca/ric/Pubs/Coastal/index.htm

[17] Information on the BC Conservation Data Centre (CDC) is available at: http://www.elp.gov.bc.ca/rib/wis/cdc/

[18] Information on Sensitive Ecosystem Inventory (SEI) is available at: http://www.elp.gov.bc.ca/rib/wis/cdc/sei/

[19] Current participating agencies in the Georgia Basin Ecosystem Conservation Partnership include Environment Canada (Canadian Wildlife Service); BC Ministry of Environment Lands and Parks (Conservation Data Centre, Parks & Wildlife); Parks Canada (Pacific Marine Heritage Legacy); Land Use Coordination Office; Habitat Conservation Trust Fund; Habitat Acquisition Trust; The Land Conservancy; Nature Conservancy of Canada; Ducks Unlimited Canada (Pacific Estuary Conservation Program); The Nature Trust; The Islands Trust Fund; and Capital Regional District Parks.

[20] See Fisheries Project Registry is located at: http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome_dev.asp

[21] The accomplishments of the PECP in securing wetland habitat were recently recognized in an international forum when they were chosen as a winner of the Ramsar Wetland Conservation Awards for 1999, in the Government/Non-governmental Coalition Category.

[22] For more information on these types of legal designations and other mechanisms see Nowlan (1999).

[23] Changes to the Ecological Gifting Program in the February 2000 Budget provides additional financial incentives for the public to make gifts of ecologically sensitive lands to conservation agencies. For more information on the ecological gift program see:

http://www.cws-scf.ec.gc.ca/habitat/ecogifts/egdon_e.html

[24] The Agricultural Land Reserve and the Forest Land Reserve are now being administered by a new" Land Reserve Commission".

[25] A copy of the report "Preserving British Columbia's Coast: A Regulatory Review" (Nowlan, 1999) is available at the following address : http://www.wcel.org/wcelpub/1999/12881.html.

[26] The full name of the document is: Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands 1993 – 1997. Volume 2: Conservation Manual

27 The Canadian Wildlife Service of Environment Canada is currently drafting this regional plan for further discussion within the context of the Canadian Shorebird Conservation Plan and joint Canada-USA conservation efforts.

[28] For an example of this type of review see http://www.wcel.org/wcelpub/3253.html

[29] Members of the Stewardship Technical Committee currently include: BC Hydro, Environment Canada, Fisheries and Oceans Canada, Habitat Conservation Trust Fund, BC Ministry of Agriculture, Food and Fisheries, BC Ministry of Environment, Lands and Parks, BC Ministry of Municipal Affairs, BC Ministry of Transportation and Highways, and the Provincial Capital Commission. There are additional supporting organizations which are listed on the Stewardship Centre web site.

[30] For information on the Urban Salmon Habitat Program (USHP) see: http://www.bcfisheries.gov.bc.ca/fishhabitats/stewardship.html

[31] For information on Fisheries Renewal BC see: http://www.fishrenewal.gov.bc.ca/

[32] For information on the Habitat Conservation and Stewardship Program see: http://www-heb.pac.dfo-mpo.gc.ca/english/programs/hcsp/default.htm

[33] For information on the Habitat Conservation Trust Fund see: http://www.elp.gov.bc.ca/hctf/

[34] For information on Forest Renewal BC see: http://www.forestrenewal.bc.ca/

[35] For information on the Habitat Restoration and Salmon Enhancement Program see: http://www-heb.pac.dfo-mpo.gc.ca/english/programs/hrsep/oldpages/default.htm

[36] This DFO program aims to have approximately 100 Steward positions (83 hired to date) to work with non-governmental organizations, First Nations, municipalities, and other government agencies in promoting awareness and developing tools for conservation and stewardship

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Howes, D.E., Morris. M and Zacharias, M. 1999. British Columbia Estuary Mapping System. Resource Inventory Committee, Province of British Columbia, Victoria, British Columbia.

Howes D.E. and Wainwright, P. (Editors and authors), with contributing authors R. Baird, L. Berg, J. Cooper, J.M. Haggarty, J. Harper, E.H. Owens, P. Reimer and K. Summers. 1995. Oil spill response atlas for Southern Strait of Georgia. Environmental Emergency Services, BC Ministry of Environment, Victoria, British Columbia, 317p

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Washington Nearshore Habitat Loss Work Group, 1998. Nearshore habitat Loss in Puget Sound: Action Strategy, Pp 14

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APPENDIX A

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APPENDIX B

Causes and Effects of Coastal Habitat Loss and Degradation in the Georgia Basin*

Activity	Purpose	Impacts	Effect Location and Duration	Temporal Impacts	Habitats or Locations most Impacted
Shoreline Armoring (includes bulkheads)	Protection of financial assets from erosion or slope movements; aesthetic enhancement	Loss of shore complexity; loss of sediment supplies to maintain beaches; changed plant-animal habitat usage	Site specific and cumulative	Largely irreversible	Intertidal areas and riparian habitats
Bottom Trawling	Commercial Fishing	Significant disturbance of the seabed and sessile or free-swimming species; changed plant-animal habitat usage	Site specific and cumulative	Unknown recovery period but likely recoverable	Sub-tidal and deep water habitats where most targeted species are located
Industrial Waste	Land based disposal of liquid wastes	Degradation of water quality; changed plant-animal habitat usage; may impact human use of marine species	Point source but water quality may be impacted over a large adjoining area; can be cumulative	May be chronic or acute; likely reversible	Intertidal, Subtidal and deep water habitats
Sewage	Land based disposal of liquid and semi-solid wastes	Degradation of water quality; smothering of habitats; may impact plant-animal habitat usage; impacts human use of marine species	Point source but water quality may be impacted over a large adjoining area; can be cumulative	May be chronic or acute; likely reversible	Mainly backshore and intertidal habitats, but likely there are some effects on subtidal habitats.
Solid Waste Landfill	Land based disposal of solid wastes (e.g. garbage)	Smothering of terrestrial or aquatic habitats; changed plant-animal habitat usage; degradation of runoff or seepage water quality.	Site specific; can be cumulative; point source pollutants may affect water quality over large adjoining areas	Chronic and mostly irreversible	All nearshore and deep water areas
Ocean Dumping	Water transported disposal of bilge or other liquid and solid wastes.	Degradation of water quality; smothering of habitats; may change plant-animal habitat usage	Point source but water quality may be impacted over a large adjoining area; can be cumulative	Chronic and irreversible	Subtidal and deep water habitats

* This table identifies some general activities and their potential impacts on coastal habitats but is not intended to be an exhaustive list

APPENDIX B continued
Causes and Effects of Coastal Habitat Loss and Degradation in the Georgia Basin

Activity	Purpose	Impacts	Effect Location and Duration	Temporal Impacts	Habitats or Locations most Impacted
Agriculture	Commercial production of crops, livestock, and other animals.	Pollution from pesticides, erosion and animal wastes; loss or alteration of habitats from cropping methods, crop types, vegetation control or the placement or use of structures (e.g. roads, buildings, fences, irrigation, etc.).	Site specific and cumulative; water quality may be impacted over large adjoining areas or downstream by point source and non-point source runoff.	Chronic and largely reversible	Direct impacts are greatest on the backshore, but all nearshore habitats can be affected.
Aquaculture	Commercial production of fish and shellfish	Disturbance or displacement of species, physical removal of habitat; depredation conflicts; water quality effects; disease risk to marine species; smothering of habitats; may impact human use of marine species	For fish farms: point source for organic wastes; water quality may be impacted over adjoining areas; can be cumulative	Largely reversible	Intertidal and Subtidal habitats
Exotic Species Introductions	Inadvertent introduction and spread of species from elsewhere in the world	Exclusion of native species and loss of community diversity; introduction of exotic diseases; impacts to food chain; loss of nearshore habitat structure (e.g. plant-animal communities or associations)	Cumulative and often widespread	Most often irreversible	All nearshore habitat can be affected but often impacts are limited to the site of introduction (e.g. aquatic species concentrated near vessel traffic areas)
Dyking / Infilling	Acquisition of "useable" lands for humans from tidal areas	Removal of intertidal or subtidal habitats; changed plant-animal habitat usage	Site specific and cumulative	Mostly Irreversible	Intertidal and Subtidal habitats

APPENDIX B continued

Causes and Effects of Coastal Habitat Loss and Degradation in the Georgia Basin

Activity	Purpose	Impacts	Effect Location and Duration	Temporal Impacts	Habitats or Locations most Impacted
Dredging	Deepening river or marine areas for navigation	Removal of bed material and sessile organisms; dredged materials may be deposited as fill on the backshore or in subtidal or deep water habitats; terrestrial or aquatic plant-animal communities are impacted by dredging and dumping; water quality is most often impacted during and for a period following dredging; can change plant-animal habitat usage	Site specific and cumulative	May be reversible at point of dredging but irreversible at point of dumping	All nearshore habitats
Construction	Shoreline or in-water structures for human uses (e.g. Navigation aids, marine cables; piers, wharves, buildings on piles, walkways, etc.)	Reduction in natural productivity, diversity, and water quality during and for a period following construction; shading of productive habitats; changed plant-animal habitat usage; can lead to secondary impacts (e.g. ferry slips can be used for viewing, beach access, etc.)	Site specific and cumulative	Mostly irreversible	All nearshore habitats
Vegetation Removal or control	Dyke or corridor maintenance; viewscape or cosmetic enhancement; hazard removal; construction; golf courses and some parks	Reduction in natural productivity and diversity; may reduce water quality (e.g. erosion or pollution); changed plant-animal habitat usage through loss of food, shelter, and screening from disturbance	Site specific and cumulative	May be chronic or acute; most impacts are reversible	Backshore
Altering Flow Regimes	Impoundment of water for generation of electricity, irrigation, or potable water	Alteration of hydrologic regimes, river morphologies, and amounts and types of materials transported to estuaries (e.g. sediments and dissolved substances); changed plant-animal habitat usage	Cumulative, site specific or large-scale changes to nearshore habitats (e.g. scouring and sedimentation); changed plant and animal communities	Largely irreversible	Wetland, backshore, and other nearshore habitats

APPENDIX B continued
Causes and Effects of Coastal Habitat Loss and Degradation in the Georgia Basin

Activity	Purpose	Impacts	Effect Location and Duration	Temporal Impacts	Habitats or Locations most Impacted
Stormwater Runoff	Drainage from human settlements to water bodies	Reduced water quality near settlements; reduction in natural productivity; increased turbidity; changed plant-animal habitat usage (e.g. reduced photosynthesis and feeding.)	Non-point source of contaminants; mostly chronic, sometimes acute.	Largely reversible	Wetland, backshore, and other nearshore habitats
Recreational Uses	Watercraft; scuba diving; angling; hunting; viewing; walking-running; nature study	Increased erosion of shorelines; damage to habitats or disturbance of sensitive species.	Site specific and cumulative	Largely reversible	Mostly backshore areas where human access and opportunities are focused.
Log Handling	Transportation of logs from harvest areas to temporary storage and processing sites	Physical damage to the seabed; smothering of habitats; reduction in water quality	Site specific	Recovery period is variable	Mostly intertidal and subtidal habitats, but dryland sorting sites are mostly in backshore areas.
Ocean floor Mining (potential)	Mineral or aggregate acquisition and drilling	Physical damage to the seabed; loss of gravel in nearshore areas; potential for pollution (e.g. oil).	Mostly site specific, but widespread effects are also possible.	Unknown but probably mostly reversible.	Intertidal (aggregate) and subtidal (minerals and petroleum)
Transportation	Movement of materials	Erosion of shorelines; operational discharges; potential large scale spills (i.e. pollution)	Site specific; some chronic and some acute	Recovery period variable, but mostly reversible.	Intertidal and subtidal habitats in high vessel traffic areas
Shellfish harvesting	Commercial/recreational fishing	Removal of organisms; disturbance to seabed; disturbance of sensitive species.	Site specific	Reversible	Local intertidal and subtidal areas may become depleted.

APPENDIX C
Legislation, Policies, Guidelines, Programs, Organizations, and Other Initiatives Pertaining to Protection and Management of Coastal Habitats in BC

NOTE: the following list is not exhaustive but serves as a useful starting point for further information. Most of the information listed is associated with a web address.

Legislation

See table in Appendix C for a brief summary of relevant legislation. For a more comprehensive review of legislation as well as other policies and initiatives affecting protection of coastal habitats, see "Preserving British Columbia's Coast: A Regulatory Review" (Nowlan, 1999) http://www.wcel.org/wcelpub/1999/12881.html

Provincial and federal statutes can be viewed at the following sites:
http://www.qp.gov.bc.ca/bcstats/
http://canada.justice.gc.ca/stable/EN/Laws/Chap/index.html

Policies and Strategies

Conservation and Protection of Habitats and Species

B.C. Coastal Zone Position Paper, June 1998. Province of British Columbia.
http://www.luco.gov.bc.ca/coastal/pt1.htm

B.C. Parks Conservation Management: Part One--Conservation Program Policies For Marine Systems, B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/bcparks/protect/cpp_p1/cpp_p1/marine.htm

B.C. Parks Conservation Management: Part One--Conservation Program Policies For Wildlife, B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/bcparks/protect/cpp_p1/cpp_p1/wildlife.htm

Federal Policy on Wetland Conservation, 1991, Government of Canada
see also associated: "Implementation Guide for Federal Land Managers" and "Wetlands and Government: Policy and Legislation for Wetland Conservation in Canada" at the same site
http://www.cws-scf.ec.gc.ca/public_e.html

Identified Wildlife Management Strategy, 1999. B.C. Ministry of Environment, Lands and Parks, B.C. Ministry of Forests.
http://www.elp.gov.bc.ca/wld/identified/

Marine Protected Areas: A Strategy for Canada's Pacific Coast (Discussion Paper), August 1998. Province of BC and Government of Canada.
http://www.luco.gov.bc.ca/pas/mpa/dispap.htm

Policy for the Management of Fish Habitat 1991 (Reprint) Fisheries and Oceans Canada.
http://www.ncr.dfo.ca/habitat/Policy/english/index_e.htm

Protected Areas Strategy, 1998, Province of British Columbia
http://www.luco.gov.bc.ca/pas/pasdocs.htm

Managing Human Use of Land and Resources

B.C. Land and Resource Management Plans
http://www.luco.gov.bc.ca/landuse.htm

B.C. Salmon Aquaculture Policy, October,1999. Ministry of Fisheries and Ministry of Environment, Lands and Parks.
http://www.fisheries.gov.bc.ca/news/News99/NR54Oct181999.htm)

BC's Interest in Fisheries and Aquaculture, September, 1997. Ministry of Aboriginal Affairs.
http://www.aaf.gov.bc.ca/aaf/nations/westbank/fish.htm

Commercial Recreation on Crown Land Policy, 1998 B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/clb/crec/finalcbr.htm

Crown Land Activities and Aboriginal Rights Policy Framework. 1997 Ministry of Aboriginal Affairs.
http://www.aaf.gov.bc.ca/aaf/pubs/crown.htm

Federal Aboriginal Fisheries Strategy, 1992 Fisheries and Oceans Canada.
http://www.dfo-mpo.gc.ca/communic/FISH_MAN/AFS_e.htm

**Greater Vancouver Liquid Waste Management Plan
http://www.gvrd.bc.ca/sewers/bro/lwmpad.html

Protocol Agreement on the Management of Cultural Heritage Resources,1999 Ministry of Small Business, Tourism and Culture, and Ministry of Forests
http://www.heritage.gov.bc.ca/arch/policy/chr.htm

Strategic Directions for Culture and Heritage Tourism in British Columbia. November 1999. Ministry of Small Business, Tourism and Culture and Tourism British Columbia.
http://www.sbtc.gov.bc.ca/programs/culture.html

The Vancouver Island Summary Land Use Plan, February 2000, Province of British Columbia.
http://www.luco.gov.bc.ca/slupinbc/vanisle/toc.htm#toc

Guidelines and Codes

Conservation and Protection of Habitats and Species

A Compendium of Working Water Quality Guideline for British Columbia. 1998 EDITION updated January 2000. B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/wat/wq/BCguidelines/working.html

Ambient Water Quality Guidelines (Criteria) For Turbidity, Suspended And Benthic Sediments, 1998. B.C. Ministry of Environment, Lands and Parks
http://www.elp.gov.bc.ca/wat/wq/BCguidelines/turbidity.html

British Columbia Approved Water Quality Guidelines (Criteria): 1998 EDITION updated January 2000, B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/wat/wq/BCguidelines/approved.html

Canadian Water Quality Guidelines, 1999 Environment Canada,
http://www.ec.gc.ca/ceqg-rcqe/water.htm

Coastal Watershed Assessment Procedure Guidebook (CWAP), 1995. 1995 (Forest Practices Code of British Columbia Act, Operational Planning Regulation)
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/coastal/CWAPTOC.HTM

Decision Framework for the Determination and Authorization of Harmful Alteration, Disruption or Destruction of Fish Habitat . Fisheries and Oceans.
http://www.dfo-mpo.gc.ca/habitat/HADD/english/index_e.htm

Fish Habitat Conservation And Protection Guidelines For Attaining No Net Habitat Loss, 1995, Fisheries and Oceans Canada
http://www.dfo-mpo.gc.ca/habitat/GuideLin/english/index_e.htm

Forest Practices Code of B.C. Act - Guidebooks, Ministry of Forests
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpc.htm
e.g. Biodiversity Guidebook
Riparian Management Area Guidebook
Coastal Watershed Assessment Procedure (CWAP) Guidebook
Managing Identified Wildlife: Procedures and Measures

Species and Plant Community Accounts for Identified Wildlife. June 1997 (Forest Practices Code of British Columbia Act, Operational Planning Regulation)
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/other/species/index.htm

Tackling non-point source water pollution in British Columbia. 1998, B.C. Ministry of Environment, Lands and Parks.
http://www.env.gov.bc.ca/wat/wq/bmp_c/npsaction.html

Water Quality Criteria (metals, organics, mirco-organisms, etc), B.C. Ministry of Environment, Lands and Parks.
http://www.elp.gov.bc.ca/wat/wq/BCguidelines/

Managing Human Use of Land and Resources

Access Near Aquatic Areas: A Guide to Sensitive Planning, Design and Management, DFO, MELP (see Table)
http://www.stewardshipcentre.org/code/main/cs_frset.htm

Best Management Practices BMPs for the Ship and Boat Building and Repair Industry in British Columbia. 1995 Environment Canada.
http://www.pyr.ec.gc.ca/ec/frap/pubs.html

BC Coastal Marina Facility and Operating Standards, Coastal Marina Operations Task Force (consisting of representatives from the Canadian Petroleum Products Institute, Environment Canada, Canadian Coast Guard and BC Environment)

Canadian Code of Conduct for Responsible Fishing Operations, Fisheries and Oceans Canada
http://www.dfo-mpo.gc.ca/communic/fish_man/coderep/eng/index_e.htm

Commercial Recreation on Crown Land, Guidelines for Staff and Applicants. July 1998. Ministry of Environment, Lands and Parks
http://www.elp.gov.bc.ca/clb/crec/crguide.htm

Departmental Guidelines on the Recreational Observation of Marine Mammals, 1994 Fisheries and Oceans Canada

Environmental Objectives, Best Management Practices and Requirements for Land Developments, MELP BC Environment Vancouver Island Region, Version 2 Feb 25, 2000. 66 p.

Forest Practices Code of B.C. Act - Guidebooks, Ministry of Forests
http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpc.htm

Guidelines for Assessing Marine Aggregate Extraction, 1993, Fisheries and Oceans Canada

Guidelines for Industry Emergency Response Contingency Plans, 1995. BC Ministry of Environment, Lands and Parks

Guidelines for Minimizing Entrainment and Impingement of Aquatic Organisms at Marine Intakes In British Columbia, 1991. Fisheries and Oceans Canada

Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters, 1998, Fisheries and Oceans Canada.
http://www.ncr.dfo.ca/habitat/explosguide/english/index_e.htm

Guidelines to Small Craft Owners And Tour Boat Captains To Prevent Any Disturbance And Harassment Of Whales, 1991 Fisheries and Oceans Canada

Guiding Principles For Joint Municipal And Industrial Emergency Preparedness, Major Industrial Accident Council of Canada

Land Development Guidelines for the Protection of Aquatic Habitat, DFO/MELP (see table).
http://www.stewardshipcentre.org/code/main/cs_frset.htm

Marina Development Guidelines for the Protection of Fish and Fish Habitat, Fisheries and Oceans Canada/Ministry of Environment, Lands and Parks. Habitat Conservation and Protection Guidelines -1998 Fisheries and Oceans Canada.
http://www.ncr.dfo.ca/habitat/c&pguide/english/index_e.htm

Mineral Exploration (MX) Code, 1998, (Mines Act), B.C. Ministry of Energy and Mines.
http://www.em.gov.bc.ca/Mining/Healsafe/mineereq.htm

Protecting the Aquatic Environment: A Boater's Guide .1997 Fisheries and Oceans Canada. Canadian Coast Guard.
http://www.ccg-gcc.gc.ca/obs-bsn/pubs/pme/main.htm

Salmon Aquaculture Review Final Report 1996, BC Environmental Assessment Office.
http://www.eao.gov.bc.ca/project/aquacult/salmon/report/toc.htm
Finfish Siting (Part D):
http://www.eao.gov.bc.ca/project/aquacult/salmon/report/V1chp4.htm

Stream Stewardship Guide for Planners and Developers, DFO/MELP (see table).
http://www.stewardshipcentre.org/code/main/cs_frset.htm

Summary of Environmental Standards and Guidelines for Fuel Handling, Transportation and Storage, 1995 (2nd ed). BC Ministry of Environment, Lands and Parks.and BC Ministry of Forests.
http://www.elp.gov.bc.ca/epd/cpr/standard/soesgffh.html

Truck to Marine Vessel Oil Transfer Procedures, 1997. Fisheries and Oceans Canada.
http://www.pacific.ccg-gcc.gc.ca/EPAGES/ENVRES/oiltransfer/index.html

Programs and Initiatives

Partnership Ventures

Ecological Gifting Program
http://www.cws-scf.ec.gc.ca/habitat/ecogifts/egdon_e.html

Fraser Basin Council
http://www.fraserbasin.bc.ca/

Fraser Basin Management Program (see Table)

Fraser River Action Plan
http://www.pyr.ec.gc.ca/ec/frap/fr-sel.html

Fraser River Estuary Management Program
http://www.bieapfremp.org/

Georgia Basin Ecosystem Initiative
http://www.pyr.ec.gc.ca/GeorgiaBasin/gbi_eIndex.htm

Pacific Coast Joint Venture
http://www.ec.gc.ca/press/pecp_b_e.htm
http://ramsar.org/key_awards99_interview_pecp.htm

Pacific Estuary Conservation Program
http://www.ec.gc.ca/press/pecp_b_e.htm
http://ramsar.org/key_awards99_interview_pecp.htm

Pacific Marine Heritage Legacy
http://www.harbour.com/parkscan/pmhl/english/english.htm

Partners in Protecting Aquatic and Riparian Resources (see Table)

Puget Sound-Georgia Basin Environmental Initiative
http://www.wa.gov/puget_sound/shared/shared.html

Stewardship

Community Watershed Stewardship Groups (see Table)

Fisheries Renewal BC
http://www.fishrenewal.gov.bc.ca/

Forest Renewal BC
http://www.forestrenewal.bc.ca/

Habitat Conservation and Stewardship Program
http://www-heb.pac.dfo-mpo.gc.ca/english/programs/hcsp/default.htm

Habitat Conservation Trust Fund
http://www.elp.gov.bc.ca/hctf/

Habitat Restoration and Salmon Enhancement Program
http://www-heb.pac.dfo-mpo.gc.ca/english/programs/hrsep/oldpages/default.htm

Stewardship Technical Committee and Stewardship Centre
http://www.stewardshipcentre.org/code/main/cs_frset.htm

Urban Salmon Habitat Program
http://www.bcfisheries.gov.bc.ca/fishhabitats/stewardship.html

Education and Awareness

Fisheries Project Registry
http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome_dev.asp

Living By Water Project and Land For Nature Initiative, Federation of B.C. Naturalists (see Table)

NatureScape British Columbia: Province of British Columbia, Government of Canada. http://www.elp.gov.bc.ca/hctf/naturescape/about.htm

Project WILD, Canadian Wildlife Federation and BC Ministry of Environment, Lands and Parks
http://www.elp.gov.bc.ca/hctf/wild/about.htm

"Spills Aren't Slick", States/BC Oil Spill Taskforce
http://www.elp.gov.bc.ca/eeeb/oils911/oils911.html

Wild BC
http://www.elp.gov.bc.ca/hctf/wild.htm

Organizations and Information Sources

BC Coastal Resource Information Management System
http://www.gis.luco.gov.bc.ca/mris/resource.htm

BC Conservation Data Centre
http://www.elp.gov.bc.ca/rib/wis/cdc/

BC Land Use Coordination Office
http://www.luco.gov.bc.ca/

BC Ministry of Agriculture, Food and Fisheries – BC Fisheries
http://www.gov.bc.ca/fish/

BC Ministry of Environment, Lands and Parks – Wildlife & Habitat Branches
http://www.gov.bc.ca/elp/

BC Ministry of Municipal Affairs
http://www.gov.bc.ca/marh/

Ducks Unlimited Canada
http://www.ducks.ca/home.html

Environment Canada - Canadian Wildlife Service
http://www.cws-scf.ec.gc.ca/

Fisheries and Oceans Canada
http://www.dfo-mpo.gc.ca/index.htm

Fisheries Project Registry
http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome_dev.asp

Habitat Conservation Trust Fund
http://www.elp.gov.bc.ca/hctf/

Resource Inventory Committee
http://www.for.gov.bc.ca/ric/Pubs/Coastal/index.htm

Resource Inventory Standards
http:www.for.gov.bc.ca/RIC/standards.htm

Sensitive Ecosystem Inventory
http://www.elp.gov.bc.ca/rib/wis/cdc/sei/

West Coast Environmental Law
http://www.wcel.org

APPENDIX D

A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin*

(NOTE: this table is not comprehensive but is intended to complement Appendix C)

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
LEGISLATION (L)				
L	Canada Marine Act	Transport Canada	Authorizes the establishment of Port Authorities and regulates maritime trade and transport. Provides for environmental assessment regulations for port activities and developments under the Canadian Environmental Assessment Act and the Canada Shipping Act.	Port authorities may require provisions that protect coastal habitats.
L	Canada Shipping Act	Transport Canada	Regulates pollution from ships, other vessels, and oil handling facilities.	Can reduce damage to marine coastal habitats through pollution.
L	Canada Wildlife Act	Environment Canada (EC)	Provides federal authority to establish and manage National Wildlife Areas.	Affords opportunities to create National Wildlife Areas over land or marine areas under the control of EC.
L	Canadian Environmental Assessment Act	EC	Regulates the review and approval of federally funded, initiated, or regulated activities. Harmonized with BCEEA.	Public review requirements afford opportunities to raise public awareness of habitat values. Coastal habitats can be protected on federal and provincial Crown lands and private lands.
L	Canadian Environmental Protection Act	EC	Regulates the production, use, storage, and disposal of toxic substances.	Can help protect coastal habitats by limiting ocean dumping or other entries of toxic substances.
L	Ecological Reserve Act (BC)	MELP	Authorizes Provincial government securement of lands, for preservation or research, as ecological reserves. Regulates the use of ecological reserves.	Can secure and authorize management of Ecological Reserves that may protect coastal habitats.
L	Environmental Assessment Act (BC)	MELP/ Environmental Assessment Office	Regulates the review and approval of major land use developments and changes to developments.	May prevent, limit, or modify large scale developments or land use activities that affect coastal habitats.
L	Fish Protection Act (BC)	MELP	Its policy directives must be reflected in local zoning and rural land use by-laws. Regulates industrial, commercial, and residential uses	Can prevent dams on designated rivers and can designate water management areas. May reduce the need for local government referrals by setting more

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APPENDIX D continued
A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin *

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
			beside streams and marine areas, not including agriculture, mining, forestry or hydroelectric activities.	uniform regulation standards.
L	Fisheries Act and Aquaculture Regulation (BC)	Ministry of Agriculture Food and Fisheries (MAFF)	The ministry has the authority to issue and enforce Aquaculture Licences for commercial shellfish ,finfish and marine plant culture.	Under the regulation, all Aquaculture Licences contain number of broadly applicable general provisions and each licence can also contain special provisos to address site-specific issues. Both general provisions and special provisos provide mechanisms for operational control and environmental management. An enforcement section provides for penalties and fines to enable enforcement of the regulation's provisions.
L	Fisheries Act (Canada)	DFO/MELP	Regulates fish harvest limits and methods, the possession, rearing or transport of fish, or the harming of fish or their habitat. The minister has authority to require plans and specifications to assess a proposed activity in an area of fish habitat and to require mitigation of impacts. Fresh water fish harvest, aquaculture, and fish farms are regulated by MELP in co-operation with DFO.	Facilitates the setting of safe harvest methods that can help protect coastal habitats. Allows the prohibition of changes or damages to habitat, and enforcement action on pollution or habitat damage.
L	Forest Practices Code of British Columbia Act	Ministry of Forests	Consists of enabling legislation, regulations, standards, and guidebooks for the control of forest practices. Applies to all Crown land in provincial forests, wilderness areas, and private lands licensed under the Forest Act of BC. Other private lands are not governed by the code except as provided under section 216.	Regulated forestry practices can mitigate impacts on coastal habitats in many different ways. Coastal habitats are not specifically addressed in the code, but the Code can be used to establish Riparian Management Areas (RMA) around fish bearing water bodies or in community watersheds. Marine Sensitive Zones (MSZ) must be identified in forest development plans required under the code and the Riparian Management Area Guidebook (RMAG) must then be followed. References to the protection of sensitive resource features can apply to coastal areas not protected by a MSZ.
L	Islands Trust Act (BC)	Islands Trust	Establishes the Islands Trust Fund to acquire and hold land or interests in land for the protection of special areas and features within	The trust exercises authority with respect to local planning and development and can protect coastal habitat.

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A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin *

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
			the Gulf Islands, the waters of the Strait of Georgia, and Howe Sound.	
L	Land Act (BC)	Minister of Environment Land and Parks /BCAL	Governs allocation/disposition of Crown lands through use of reserves, withdrawals, easements, tenures etc. The Land Act is under the Minister of MELP but BCAL has been delegated responsibility for administering many aspects of the disposition process. MELP has retained some functions, including related policy development.	Governs initial and ongoing decisions to allow or disallow activities on coastal Crown land including land below high tide. May be used to designate Crown coastal areas for specific uses such as conservation.
L	Land Reserve Commission Act (BC)	BC Ministry of Agriculture, Food and Fisheries and BC Ministry of Forests	Integrates former Agricultural Land Commission and Forest Land Commission under a new Land Reserve Commission with related responsibilities under the Agricultural Land Reserve and Forest Land Reserve.	Can limit or prevent development or other activities near or in agricultural areas or forested areas. These may include coastal habitats.
L	Land Title Act (BC)	Ministry of Environment, Lands and Parks (MELP)	Regulates the registration of legal title and subdivision of all lands. Provides authority for the registration of covenants against a title and the designation of conservation organizations authorized to enter into covenants.	Requires the dedication of public access to the water when waterfront land is subdivided. Covenants between landowners, Crown agencies and designated conservation organizations can be used to protect coastal habitats.
L	Local Government Act (formerly Municipal Act) (BC)	Ministry of Municipal Affairs	Authorizes municipal and regional governments to exercise authority over land use planning, regulation, development approval, servicing, and taxing of lands and surface, aquatic and marine waters in their jurisdiction. Applies to private lands and Crown lands under certain private tenures, but not to Federal lands. The provincial government retains senior regulatory authority. Provides a legal framework for creating strategies to control growth and protect, restore, and enhance the natural environment. Allows Official Community Plans (OCPs) to designate lands for conservation.	Development zoning decisions and regulation of sewage and waste can directly or indirectly affect coastal habitats. Local bylaws can be used to protect shorelines, trees, wetlands and watercourses, control soil removal and restrict development on land subject to flooding. OCPs can require developers to assess environmental impacts of proposed developments and make planning adjustments. Conservation covenants with landowners can help protect coastal habitats.

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APPENDIX D continued
A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin *

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
			Enables creation of local bylaws.	
L	Migratory Birds Convention Act (Canada)	EC	Regulates the harvest, possession, and transport of migratory birds.	
L	Mines Act (BC)	BC Ministry of Energy and Mines	Regulates all aspects of mining operations and administers mine reclamation funds. Allows a security to be posted to protect watercourses or reclaim a mine.	A moratorium on oil, gas, and mineral exploration off BC's coast established in 1972 remains in place.
L	National Parks Act	Parks Canada	Provides federal authority to establish and manage National Parks and protected areas.	Affords opportunities to create National land or marine Parks or protected areas.
L	Navigable Waters Protection Act (Canada)	Transport Canada	Regulates the placement of any structures in navigable waters.	Can be used to prohibit or limit the placement of structures in the marine areas of coastal habitats.
L	Oceans Act (Canada)	Fisheries and Oceans Canada (DFO)	Consolidates Canada's ocean-related legislation. Provides authority for the DFO Minister to lead the development of strategies and integrated, sustainable management plans for estuarine, coastal, and marine ecosystems.	Can be used for the development of a coast-wide strategy for the management of marine ecosystems and the creation of Marine Protected Areas. Marine Protected Areas may be used to conserve and protect commercial and non-commercial fishery resources, threatened marine species, unique habitats, and marine areas of high biodiversity or biological productivity.
L	Park Act (BC)	MELP	Authorizes securing land for provincial parks; regulates all uses in provincial parks.	Strictly controls and limits impacts on coastal habitats in parks and recreation areas.
L	proposed National Marine Conservation Areas Act	Canadian Heritage- Parks Canada	Provides authority to create national Marine Protected Areas that can be zoned for multiple uses.	Could be used to protect significant marine areas.
L	Waste Management Act (BC)	MELP	Establishes safe limits and regulates the discharge or disposal of gas, liquid, solid, and special wastes. Regulates the redevelopment of contaminated land.	Influences waste discharges or disposals that impact surface water or groundwater and coastal habitats.
L	Water Act (BC)	MELP	Establishes provincial ownership of all fresh water and beds of water bodies. Regulates licensing for the extraction and use of all	Influences water uses and water control works that impact coastal habitats.

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APPENDIX D continued
A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin *

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
			water (except groundwater) and any changes in and around water bodies.	
L	Wildlife Act (BC)	MELP	Regulates game harvest limits and methods, the possession or transport of wildlife, or disturbance of wildlife. Authorizes the purchase of private land and the creation of Wildlife Management Areas and Wildlife Sanctuaries. Provides for the designation of endangered or threatened vertebrates and the protection of their habitats within a Critical Wildlife Management Area.	Facilitates the setting of safe harvest methods or limits. Includes limited prohibitions against damage to wildlife habitat, including the nests of birds and lands within a Wildlife Management Area.
POLICIES AND STRATEGIES (PS)				
PS–*Conservation and Protection of Habitats and Species*				
PS	BC Coastal Zone Position paper	DFO/MELP	Sets out the province's longer-term vision, interests, and objectives for management of the coastal zone and its resources. Provides the basis for discussions with the Federal government to develop a National Oceans Strategy	Provides a framework for the development of strategies and regulations governing the long term management of the coastal zone.
PS	Federal Policy on Wetland Conservation	EC	Sets out Canada's position regarding the protection of wetlands, including a 'no net loss' policy.	Improved wetlands protection could help protect some coastal habitats.
PS	Greater Vancouver Liquid Waste Management Plan	Greater Vancouver Regional District	Works to reduce greater Vancouver sewage outflows and improve sewage treatment standards.	Significant reductions in sewer outflows and improved sewage treatment standards will positively affect coastal habitats.
PS	Identified Wildlife Management Strategy	MOF/MELP	A component of the Forest Practices Code of BC. Its goal is to preserve elements of biodiversity that are not addressed through other components of the Code.	May be applied to threatened and endangered species or plant communities in coastal habitats. Provides foresters and ranchers with best management practices for managing habitats for these species and plant communities.

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
PS	Marine Protected Areas, A Strategy for Canada's Pacific Coast (1998)	DFO/MELP	Intends to coordinate all existing federal and provincial Marine Protected Areas programs under a single umbrella. Compliments the development of a national system of Marine Protected Areas.	Intends to build a system of Marine Protected Areas by 2010 through a series of coastal planning processes. Minimum standards of protection will apply to all Marine Protected Areas.
PS	Policy for the Management of Fish Habitat (Canada)	DFO	Sets out the federal position of 'no net loss' of fish habitat. Encourages mitigation of impacts such that there is no net loss of fish habitat quantity or quality. See also associated Habitat Conservation and Protection Guidelines.	Helps prevent the loss or degradation of coastal fish habitats.
PS--Managing Human Use of Land and Resources				
PS	Commercial Recreation on Crown Land Policy (BC)	MELP	Sets out the framework for management of commercial recreation on lands and waters outside areas of local government.	May help limit damaging recreational activities in coastal habitats.
PS	Salmon Aquaculture Policy (BC)	BC Fisheries/MELP	Sets out guidelines and standards for salmon aquaculture projects in the province.	May help prevent damage to coastal habitats from salmon aquaculture waste, high risk technologies, etc.
PS	Vancouver Island Land Use Plan	former BC Commission on Resources and the Environment (CORE)	Developed through extensive stakeholder and public consultation. Used to select new protected areas and recommend land-use zones for the Crown land base. Separate consultations and plan were developed to address land use issues in Cayoquot Sound.	
GUIDELINES AND CODES (GC)				
GC--Conservation and Protection of Habitats and Species				
GC	Guidebooks under FPC for: Coastal	MOF/MELP	The Forest Practices Code (Code) specifies planning and operational guidelines for each phase of timber harvesting operations around	Can help to ensure the protection of fish populations and habitats during forest harvesting, set constraints on forest practices for some riparian areas, and reduce the

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
	Watershed Assessment, Fish-Stream Identification Riparian Management, and Biodiversity		streams, lakes and wetlands. Documents provide managers, planners, and field personnel with suitable practices to meet the objectives and requirements of the Code. These guidebooks address: identifying streams on the basis of fish presence; establishment of riparian management areas (RMAs) and/or reserve zones around streams, providing guidance for coastal watershed assessments; and maintenance of biodiversity	impacts of forest management on biodiversity. Watershed assessments may also be requested jointly by a Ministry of Forests district manager and a designated environment official in watersheds that are determined to have significant sensitivity, significant downstream fisheries values, or licensed domestic water users.
GC–*Managing Human Use of Land and Resources*				
GC	Access Near Aquatic Areas: A Guide to Sensitive Planning, Design and Management	DFO/MELP	Encourages the balancing of conservation strategies with planning, design, and management of access near aquatic areas. Advises users, resource managers, and land managers to share in the management of those areas.	Makes the public, local governments, and other government staff aware of the value and sensitivity of aquatic areas. Local governments can include guideline provisions in OCPs, bylaws, and development agreements: Assists developers with environmentally responsible construction.
GC	Environmental Objectives and Best Management Practices for Land Development Requirements	MELP – Vancouver Island Region	To assist land development approving authorities in the review and environmental assessment of land development proposals. Provides a proactive environmental management and protection response for regulating land development. Lists environmental objectives and recommendations for protecting environmental values and lists ministry requirements where the activity is regulated under ministry legislation.	Provides recommendations to developers, planners, and approving agencies for inclusion in development permits and land use plans. Local governments may incorporate the BMPs in their decision making process. Provides guidelines for protection of watercourse and riparian habitat, wildlife habitat, sensitive habitat, and guidelines for water and stormwater management.
GC	Land Development Guidelines for the Protection	DFO/MELP	Provides development guidelines for maintaining the quantity and quality of fish habitats.	May include strip protection, erosion control, and other protections for coastal habitats.

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APPENDIX D continued
A Summary of Some of the Laws, Policies, Guidelines, and other Initiatives Relevant to Coastal Habitat Protection and Management in the Georgia Basin *

Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
	of Aquatic Habitat			
GC	Marina Development Guidelines for the Protection of Fish and Fish Habitat	DFO/MELP	Provides information on measures required to gain DFO and MELP approvals under the governing Federal and Provincial environmental legislation.	Helps developers understand and comply with environmental protection conditions that can be set for obtaining permits needed for the development, construction, and maintenance of Marina facilities.
GC	Stream Stewardship Guide for Planners and Developers	DFO/MELP	Demonstrates how Official Community Plans (OCPs), zoning, and other legal tools can be used to protect environmentally sensitive areas and fish habitat.	Provides recommendations to developers and planners. Local governments may develop OCPs, bylaws, or permit standards that incorporate the principles or specifications for the protection of coastal habitat.
PROGRAMS AND INITIATIVES (PI)				
	PI--Partnership Ventures			
PI	Fraser Basin Council	36 member government/non-government Board of Directors	A not-for-profit, charitable organization established in 1997 to ensure the sustainability of the Fraser Basin. The Council's 36 member Board reflects government (including First Nations) and non-government interests. It facilitates decisionmaking to better balance social, economic and environmental values and undertakes on the ground projects that advance the vision and principles articulated in its "Charter for Sustainability."	
PI	Fraser Basin Management Program	EC/DFO	Advances the environmental, economic, and social sustainability of the Fraser River basin. A 19-member board represents various governments and private interests.	Helps to facilitate co-ordination between governments and to share information on multi-jurisdictional issues like coastal habitat protection.
PI	Fraser River		Works to reduce and reverse environmental	Includes mapping of sensitive fish habitats and funding

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
	Action Plan	EC/DFO	degradation in the Fraser River basin by rehabilitating habitats and developing a sustainable development management program.	of studies of the effects of urban and agricultural runoff in the Fraser River Basin. Considerable stream habitat has been restored or enhanced, and erosion has been reduced.
PI	Fraser River Estuary Management Program (FREMP)	Multi-agency partnership	Brings together the agencies responsible for setting and enforcing environmental legislation and policy with those responsible for land and water management in order to coordinate long range planning and operational decision making to ensure a sustainable future for the Fraser River estuary.	Works to conserve and enhance the environmental quality of the Fraser river and estuary to sustain healthy fish, wildlife, plants, and people. Encourages human activities and economic development that protect and enhance the environmental quality of the estuary.
PI	Georgia Basin Ecosystem Initiative	EC/MELP working in partnership with First Nations, local gov'ts, communities, industry, universities, and NGOs	A partnership of government agencies and private organizations seeking to manage growth to achieve healthy, productive and sustainable ecosystems and communities in the Georgia Basin.	Intends to identify priority coastal habitats for securement, encourage and support partnership and stewardship initiatives to improve protection and conservation of species and habitats, and improve the environmental responsibility and sustainability of communities.
PI	Pacific Coast Joint Venture	Partnership (Gov't/ non-gov't)	The PCJV is a partnership between governmental and non-governmental agencies in the U.S. and Canada working to conserve wetlands on North America's pacific coast.	See above.
PI	Pacific Estuary Conservation Program (PECP)	Gov't/non-gov't Partnership	A coalition of Canadian governmental agencies and non-governmental conservation organizations working to secure estuary habitat through acquisition, creation of nature reserves, and stewardship of privately-owned	Critical coastal habitats can be secured and then receive long term management.

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
			land along BCs coast. The PECP is now the securement arm of the PCJV (see below) in BC.	
PI	Pacific Marine Heritage Legacy	EC/MELP	A 5 year program to acquire coastal properties in the Gulf Islands.	Acquired properties can receive designation as either Provincial or National Parks.
PI	Partners in Protecting Aquatic and Riparian Resources	Partnership (DFO/MELP/ Local Governments/Key Stakeholders)	Works to prevent the loss of habitat by influencing urban development processes at early stages.	Helps to protect habitats and mitigate development impacts by ensuring that different levels of government and key stakeholder groups are considering sensitive habits early in the development review process.
PI	Urban Development Referral Process	Administered by local governments.	Local governments refer proposed land uses to approving agencies to gain their inputs, to assure good land use practices, and to make sure legal requirements are being met. Referrals are not a legal requirement.	Refusals must be based on legal requirements, but recommendations can include habitat protection guidelines. (A recent evaluation of the process indicated there was significant noncompliance with approval conditions.)
PI–*Stewardship*				
PI	Community Watershed Stewardship Groups	Volunteers	Under the supervision of DFO and MELP fisheries staff, local volunteers are working to restore fish habitats throughout the Fraser Basin and in the Comox/Courtenay area	Debris has been removed or added and local stewardship groups have added vegetation or spawning gravels to many streams.
PI	Forest Renewal BC (FRBC)	Crown Corporation FRBC	Administers special stumpage fee revenues through contract agreements with government agencies, forest companies. Restores habitats impacted by logging practices and provides training and employment opportunities for displaced forest workers.	Can help restore coastal habitats through such projects as restoration of fish habitat and wetlands and rehabilitation of logging roads.

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
PI	"Keeper" programs: Shorekeepers Reefkeepers Streamkeepers Wetlandkeepers	DFO for Shorekeepers, Reefkeepers, Streamkeepers and EC and BC Wildlife Federation for Wetlandkeepers	Programs for individuals and community groups interested in stewarding specific habitats; programs differ but may include: information collection and monitoring, public awareness/education, restoration, etc.	May assist in identifying issues and trends in coastal habitats, raising public awareness, and conserving or restoring important coastal habitats
PI	Habitat Restoration and Salmon Enhancement Program	DFO	Main purpose is to revitalize salmonid populations in the Pacific Region through habitat restoration, stock rebuilding and resource and watershed stewardship. Each year, HRSEP funds over one hundred habitat restoration works, stewardship initiatives and stock rebuilding activities operated and administered by a variety of community groups and agencies.	Enhancements have included the creation of side-channels, spawning gravel and flow control placement, and clean ups in industrial, urban, and estuary areas.
PI	Urban Salmon Habitat Program	Fisheries Renewal/MELP	Focuses on protecting and restoring salmon and salmonid habitat in urban areas and urban-rural interface. The program includes: placement of Urban Fisheries Specialists in regional offices to assist local governments and stewardship groups; cost sharing of local government programs supportive of USHP goals; and providing funding for community volunteers and ngos to implement stream stewardship programs.	Can help to protect and restore salmon and salmonid habitat in streams that enter the coastal zone in or near urban areas
PI--*Education and Awareness*				
PI	Land For Nature Initiative	Federation of BC Naturalists (FBCN)		Identifies sensitive habitats and encourages government and other bodies with financial resources to secure those habitats.
PI	Living By Water Project	BC Lead Partner: The Federation of		Raises awareness of waterfront residents, the public, and government about the importance of protecting

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Type	Name	Responsible Body	Purpose	Potential Effects on Coastal Habitat
		BC Naturalists		riparian habitats.
Organizations and Information Sources (OI)				
OI	BC Coastal Resource Information Management System (CRIMS)	BC Land Use Coordination Office	An ongoing project to collect and interpret coastal information, which is later used as baseline data for coastal planning and management in B.C.	Assists in various facets of coastal habitat planning and management.
OI	BC Conservation Data Centre	MELP/ Developed in partnership with various agencies	Systematically collect and disseminate information on the status, locations, and level of protection of rare and endangered plants, animals, and plant communities in British Columbia.	Some records of sensitive ecosystems and marine vertebrates are maintained, but more support is required to maintain occurrence and status records for most coastal and marine plant and animal species.
OI	Sensitive Ecosystem Inventory (SEI)	EC/MELP	This inventory program includes mapping of sensitive terrestrial habitats larger than 0.5 hectares that are ranked as rare or endangered provincially and which are found within southeast Vancouver Island and the Gulf Islands. Inventory of the Sunshine Coast portions of the Georgia Basin is in progress.	The resulting maps help to ensure developers, landowners, and local governments are aware of the location of sensitive ecosystems in the Georgia Basin. An associated Technical Manual describes the inventory process and discusses results. A Conservation Manual examines sensitive ecosystem impacts of human activities and tools to conserve remaining sites.

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